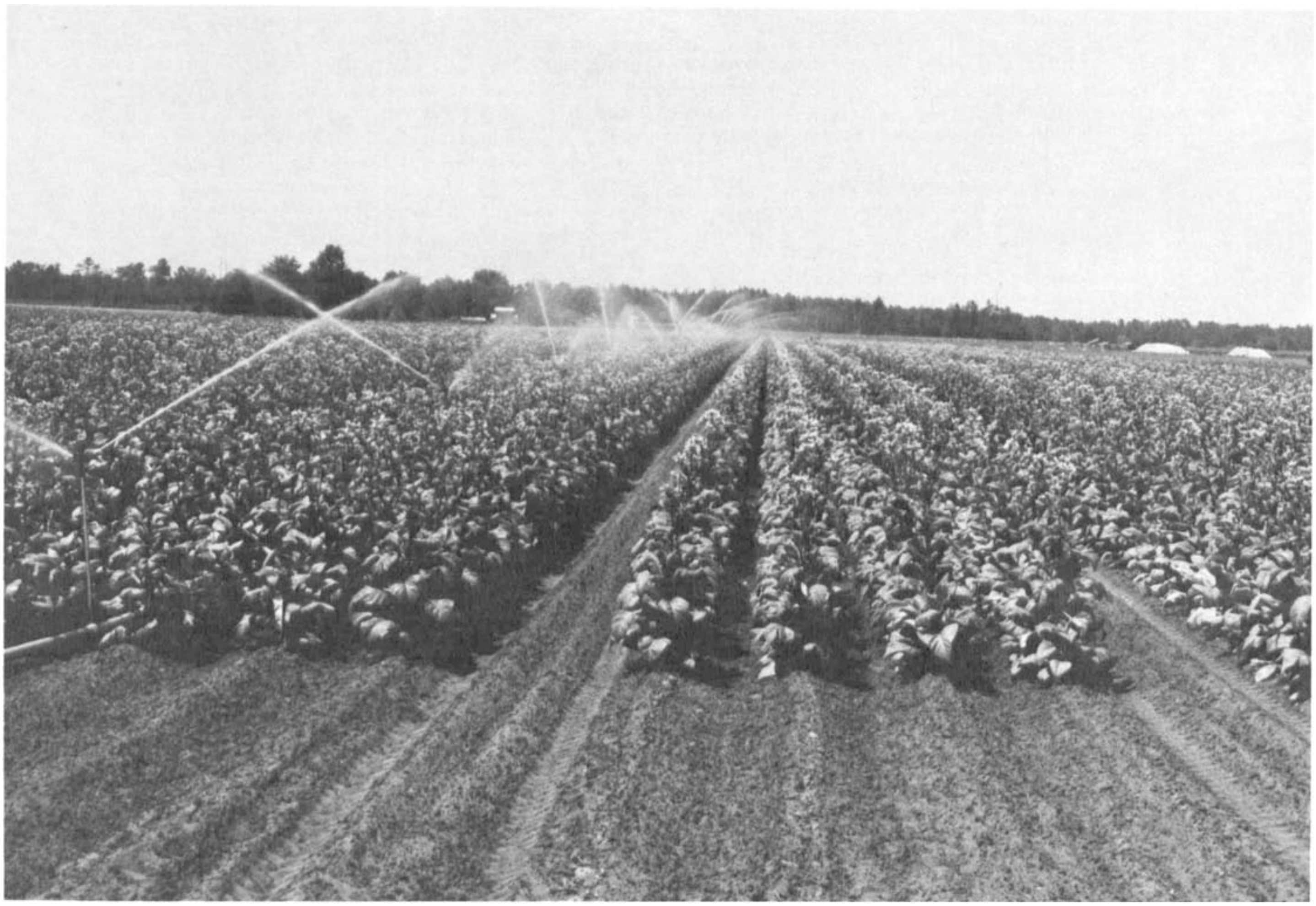
SOIL SURVEY OF

Colquitt and Cook Counties, Georgia



United States Department of Agriculture
Soil Conservation Service
In cooperation with
University of Georgia, College of Agriculture
Agricultural Experiment Stations

Major fieldwork for this soil survey was done in the period 1968–69. Soil names and descriptions were approved in 1970. Unless otherwise indicated, statements in the publication refer to conditions in the two counties in 1970. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. It is part of the technical assistance furnished to the Middle South Georgia and Alapaha Soil and Water Conservation Districts.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Colquitt and Cook Counties are outlined and are identified by symbols on the detailed soil map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the areas if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the survey area in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the page for the woodland group to which the soil has been assigned.

Individual colored maps that show the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the descriptions of the woodland groups.

Foresters and others can refer to the section "Use of the Soils as Woodland," where the soils of the two counties are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Soil Interpretations for Wildlife Habitat."

Community planners and others can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the section "Soil Properties Considered in Town and Country Planning."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Colquitt and Cook Counties may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the two counties in the section "General Nature of the Counties."

Cover: **Irrigating tobacco on Fuquay loamy sand, 1 to 4 percent slopes.**

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SOIL SURVEY OF COLQUITT AND COOK COUNTIES, GEORGIA

BY JOHN W. CALHOUN AND JOE G. STEVENS, SOIL CONSERVATION SERVICE
SOILS SURVEYED BY JOHN W. CALHOUN, JOE G. STEVENS, AND GARNET J. WOOD, SOIL CONSERVATION SERVICE[1]

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

COLQUITT AND COOK COUNTIES are in the south-central part of Georgia (fig. 1) and are entirely in the Southern Coastal Plain Resource Area. The total acreage of the two counties is 509,120 acres, or 796 square miles.

Moultrie is the county seat of Colquitt County, and Adel is the county seat of Cook County. Both cities are located near the center of their respective counties.

[1] WINFIELD S. CARSON, RICHARD H. GILBERT, RUSSELL O. NEAL, CARL E. DELLINGER, and WILLIAM R. WAITE, JR., Soil Conservation Service, assisted in making the soil survey.

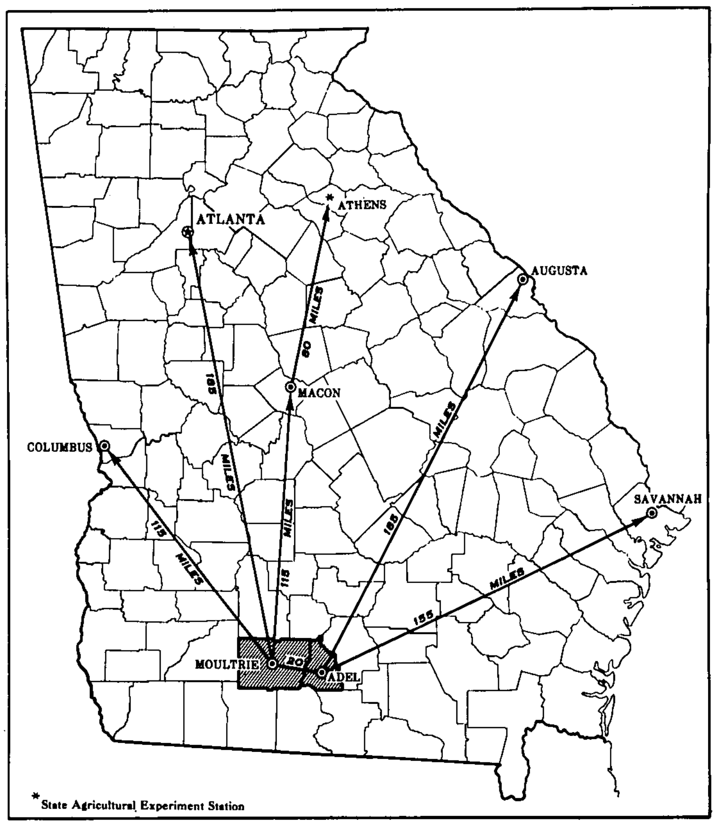

Figure 1.—Location of Colquitt and Cook Counties in Georgia.

Drainage for the two counties is provided by the New, Withlacoochee, Little, and Ochlockonee Rivers and their tributaries. The New and Withlacoochee Rivers form the eastern boundary of Cook County, and the Little River forms the western boundary.

The survey area is nearly level to sloping and is dissected by numerous shallow streams. The steeper, more broken topography occurs in the western and northeastern parts of Colquitt County. The southern part of Cook County has a number of shallow bays or cypress ponds that range to as much as several hundred acres in size and are covered with water several months of the year.

According to the 1969 census, about 50 percent of the two counties is under cultivation and in pasture. Soils in these areas are well-drained loamy sands. They are used extensively for corn, peanuts, cotton, tobacco, soybeans, and truck crops. Considerable farm income also is derived from livestock and livestock products, especially hogs. Most farms are of the general type, although field crop farms are numerous.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Colquitt and Cook Counties, where they are located, and how they can be used. The soil scientists went into the survey area knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes; the size and speed of streams; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the

soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Tifton and Ocilla, for example, are the names of two soil series. All the soils in the United States that have the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Tifton loamy sand, 2 to 5 percent slopes, is one of several phases within the Tifton series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is predominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Two such kinds of mapping units are shown on the soil map of Colquitt and Cook Counties: soil complexes and undifferentiated groups.

A soil complex consists of areas of two or more soils so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Stilson-Urban land complex is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. The name of an undifferentiated group consists of the names of the dominant soils, joined by "and." Osier and Pelham soils is an example.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is done when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way as to be readily useful to different groups of users, among them farmers, managers of woodland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. Then they adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Colquitt and Cook Counties. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map that shows soil associations is useful to people who want a general idea of the soils in a survey area, who want to compare different parts of a survey area, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field or for selecting the exact location of a road, building, or similar structure because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The eight soil associations in Colquitt and Cook Counties are described on the following pages.

1. Alapaha-Leefield association

Poorly drained and somewhat poorly drained, nearly level soils on broad flats

Most of this association is in Colquitt County, southeast of Ellenton, south of the Moultrie-Thomasville Airport, and southwest of Berlin. The landscape is one of broad flats where slopes are generally less than 2 percent, numerous and widely distributed intermittent ponds, and a few small streams.

This association makes up about 5 percent of the two counties. It is about 50 percent Alapaha soils, 30 percent Leefield soils, and 20 percent the less extensive Fuquay, Dothan, Stilson, and Robertsdale soils.

Alapaha soils are in low areas along drainageways. They are poorly drained. Typically, the surface layer is dark-gray loamy sand about 12 inches thick. Beneath this layer is gray loamy sand about 14 inches thick. The subsoil is mainly light-gray and gray sandy clay loam mottled with yellowish brown, strong brown, red, and brownish yellow.

Leefield soils are in areas slightly higher on the landscape than Alapaha soils. They are somewhat poorly drained. Typically, the surface layer is very dark gray loamy sand about 6 inches thick. Beneath this layer, to a depth of about 31 inches, is mainly brownish-yellow loamy sand mottled with light gray and light yellowish brown.

The subsoil is yellowish-brown sandy clay loam that extends to a depth of 65 inches. It is mottled with red and light gray in the upper 24 inches and mottled with light gray, brownish yellow, and red in the lower part.

Of the less extensive soils, the well-drained Fuquay and Dothan soils are on uplands, on the highest parts of the landscape. The moderately well drained Stilson soils and the somewhat poorly drained Robertsdale soils are both slightly lower on the landscape than Dothan and Fuquay soils, but higher than Leefield soils.

Only a small part of this association is cultivated. Excess water and a seasonal high water table are the main limitations. If adequately drained, Leefield soils are suitable for crops. Corn and tobacco are the main crops. Alapaha soils are used mainly for trees. Some areas are used for pasture.

The average farm in this association is about 200 acres in size. Several are much larger. General farming dominates. Most farms are operated by the owner.

This association has moderate to severe limitations for most nonfarm uses commonly associated with town and country development because the soils are wet and subject to flooding.

2. *Kershaw-Alapaha-Fuquay association*

Excessively drained and well-drained, nearly level to very gently sloping soils on ridges; and poorly drained, nearly level soils along drainageways and in low, flat areas

Most of this association is along Little River on the west side of Cook County and is parallel and east of Warrior Creek in the north-central part of Colquitt County. The landscape is one of broad, very gently sloping ridges where slopes are generally less than 5 percent. A number of shallow ponds and narrow drainageways occur, and a number of streams originate within the boundaries of the association.

This association makes up about 4 percent of the two counties. It is about 50 percent Kershaw soils, 25 percent Alapaha soils, 10 percent Fuquay soils, and 15 percent the less extensive Albany and Ocilla soils.

Kershaw soils are excessively drained. They are sandy to a depth of more than 6 feet. Typically, the surface layer is very dark gray sand about 4 inches thick. Beneath this layer is grayish-brown sand to a depth of 8 inches, light yellowish-brown sand to a depth of 14 inches, and light olive-brown sand that has splotches of light gray to a depth of 24 inches. Between a depth of 24 and 72 inches is light yellowish-brown sand that has few, fine, faint, strong-brown mottles below a depth of 44 inches.

Alapaha soils are mainly along drainageways and in low, flat areas. They are poorly drained. Typically, the surface layer is dark-gray loamy sand about 12 inches thick. Beneath this layer is gray loamy sand about 14 inches thick. The subsoil is mainly light-gray and gray sandy clay loam mottled with yellowish brown, strong brown, red, and brownish yellow.

Fuquay soils are on uplands. They are well drained. Typically, the surface layer is grayish-brown loamy sand about 6 inches thick. Below this layer is light olive-brown loamy sand about 18 inches thick. The subsoil extends to a depth of about 72 inches. It is friable, yellowish-brown sandy loam in the upper 8 inches; yellowish-brown sandy clay loam mottled with yellowish red in the next 10 inches; mottled light yellowish-brown sandy clay loam in the next 18 inches; and gray sandy clay mottled with shades of yellow and red in the lower 12 inches.

Of the less extensive soils, the somewhat poorly drained Albany and Ocilla soils are both slightly lower on the landscape than Kershaw and Fuquay soils.

This association is poorly suited to cultivation and pasture, except for the Fuquay soils. Most of it is wooded.

The average farm in this association is about 150 acres in size. Most farms are privately owned.

This association has limitations that range from slight to severe for most nonfarm uses commonly associated with town and country development. Kershaw soils are limited because they are sandy, and Alapaha soils because they are wet.

3. *Leefield-Alapaha association*

Somewhat poorly drained and poorly drained, nearly level soils on broad flats

Most of this association is in the vicinity of Lenox and Cecil in Cook County. The landscape is one of broad flats where slopes are generally less than 2 percent. Numerous intermittent ponds that range from 1 acre to several acres in size are distributed over the landscape. Sluggish branches that have poorly defined channels occur throughout the association.

This association makes up about 8 percent of the two counties. It is about 40 percent Leefield soils, 25 percent Alapaha soils, and 35 percent the less extensive Tifton, Fuquay, Olustee, Mascotte, and Stilson soils.

Leefield soils are somewhat poorly drained. They are slightly higher on the landscape than Alapaha soils. Typically, the surface layer is very dark gray loamy sand about 6 inches thick. Below this layer, to a depth of 31 inches, is mainly brownish-yellow loamy sand mottled with light gray and light yellowish brown. The subsoil extends to a depth of 65 inches. It is yellowish-brown sandy clay loam mottled with red and light gray in the upper 24 inches and mottled light-gray, brownish-yellow, and red sandy clay loam in the lower part.

Alapaha soils are mainly along drainageways and in flat, low areas. They are poorly drained. Typically, the surface layer is dark-gray loamy sand about 12 inches thick. Beneath this layer is gray loamy sand about 14 inches thick. The subsoil is mainly light-gray and gray sandy clay loam mottled with yellowish brown, strong brown, red, and brownish yellow.

Of the less extensive soils, the well drained Tifton and Fuquay soils are on the highest parts of the landscape, and the moderately well drained Stilson soils and the poorly drained Olustee and Mascotte soils are all on broad flats.

A small to moderate part of this association is used for crops and pasture. The Leefield soils and most of the less extensive soils can be farmed, although some drainage is needed for certain crops. Plant response is generally good where management is good. Corn, tobacco, and peanuts are the main crops. The wetter Alapaha and Mascotte soils are used mostly for trees, but some areas of Alapaha soils are pastured.

The average farm in this association is 150 to 225 acres in size, although some are larger. General farming dominates. Most farms are operated by their owner.

This association has moderate to severe limitations for

most nonfarm uses commonly associated with town and country development, mainly because the soils are wet.

4. *Tifton-Alapaha association*

Well-drained, nearly level to gently sloping soils on broad upland divides; and poorly drained, nearly level soils in flat, low areas and along drainageways

This association is one of broad divides, flats, and drainageways. The divides are cut by many small shallow streams that originate within the boundaries of the association.

This association makes up about 59 percent of the two counties. It is about 45 percent Tifton soils, 25 percent Alapaha soils, and 30 percent the less extensive Fuquay, Dothan, Carnegie, Sunsweet, Grady, Irvington, Stilson, and Leefield soils.

Tifton soils are in the higher upland areas. They are well drained. Slopes are 0 to 8 percent. Typically, the surface layer is dark grayish-brown loamy sand 10 inches thick. The subsoil is sandy clay loam. It extends to a depth of 66 inches. It is yellowish brown in the upper part; yellowish brown mottled with shades of brown, yellow, red, and gray in the middle part; and red mottled with shades of brown, yellow, and gray in the lower part. Small rounded iron concretions one-eighth to one-half inch in diameter are on the surface and throughout most of the profile.

Alapaha soils are along the heads of streams, on low flats, and in intermittently ponded areas and drainageways. They are poorly drained. Slopes are dominantly less than 3 percent. Typically, the surface layer is dark-gray loamy sand about 12 inches thick. Beneath this layer is gray loamy sand about 14 inches thick. The subsoil is mainly light-gray and gray sandy clay loam mottled with yellowish brown, strong brown, red, and brownish yellow.

Of the less extensive soils, the well drained Fuquay, Dothan, Carnegie, and Sunsweet soils are on uplands; the very poorly drained Grady soils are in ponded areas; and the moderately well drained Irvington and Stilson soils and the somewhat poorly drained Leefield soils are all slightly lower on the landscape than Tifton soils.

A large part of the cultivated acreage in Colquitt and Cook Counties is on this association and is well suited to farming. Corn, cotton, peanuts, and tobacco are the main crops. Some truck crops are also grown, and a large acreage is in pasture.

The average farm in this association is about 170 acres in size. General farming dominates. Nearly all farms are operated by their owners.

The major part of this association is well drained. Limitations are only slight for most nonfarm uses commonly associated with town and country development. Alapaha soils in the low, flat, wet areas are severely limited because they have a seasonal high water table and are frequently flooded.

5. *Fuquay-Alapaha-Leefield association*

Well-drained and somewhat poorly drained, nearly level to very gently sloping soils on broad ridges; and poorly drained, nearly level soils on broad flats and in depressions

The largest areas of this association are on broad flats in the vicinity of Adel and Sparks, in Cook County. Other areas are south and east of Moultrie. The landscape is one of broad, smooth areas where slopes are generally 3 percent or less. Intermittent ponds are numerous and widely distributed, and a few streams originate in the outer parts of the association.

This association makes up about 7 percent of the two counties. It is about 55 percent Fuquay soils, 30 percent Alapaha soils, 10 percent Leefield soils, and 5 percent the less extensive Tifton, Dothan, Irvington, and Stilson soils.

Fuquay soils are on the higher broad ridges. They are well drained. Typically, the surface layer is grayish-brown loamy sand about 6 inches thick. Below this layer, to a depth of 24 inches, is light olive-brown loamy sand. The subsoil extends to a depth of about 72 inches. To a depth of about 32 inches, it is friable, yellowish-brown sandy loam. To a depth of about 42 inches, it is yellowish-brown sandy clay loam mottled with yellowish red. To a depth of about 60 inches, it is mottled light yellowish-brown sandy clay loam. Below this, to a depth of 72 inches, it is gray mottled with shades of yellow and red.

Alapaha soils are on broad flats, in intermittently ponded areas, and along the heads of intermittent streams. They are poorly drained. Typically, the surface layer is dark-gray loamy sand about 12 inches thick. Beneath this layer is gray loamy sand about 14 inches thick. The subsoil is mainly light-gray and gray sandy clay loam mottled with yellowish brown, strong brown, red, and brownish yellow.

Leefield soils are on parts of the landscape intermediate between the Fuquay soils and the low, wet Alapaha soils. They are somewhat poorly drained. Typically, the surface layer is very dark gray loamy sand about 6 inches thick. Below this, to a depth of about 31 inches, is mainly brownish-yellow loamy sand mottled with light gray and light yellowish brown. The subsoil extends to a depth of 65 inches. It is yellowish-brown sandy clay loam mottled with red and light gray in the upper 24 inches and mottled light-gray, brownish-yellow, and red sandy clay loam in the lower part.

Of the less extensive soils, the well drained Tifton and Dothan soils are on broad ridges along with Fuquay soils, and the moderately well drained Irvington and Stilson soils are slightly lower on the landscape.

A moderate part of this assocation is used for crops. The Fuquay, Leefield, Tifton, Dothan, and Stilson soils are farmed. Corn, cotton, peanuts, and tobacco are the main crops. Truck crops are also grown in some areas of this association, and a moderate acreage is used for pasture. The Alapaha soils are used mainly for trees.

The average farm in this association is about 200 acres in size. General farming dominates. Most farms are privately owned and are operated by their owner.

Most of the soils in this association have slight to moderate limitations for most nonfarm uses commonly associated with town and country development. Alapaha soils are severely limited because they are wet and are likely to be flooded.

6. *Bayboro-Olustee association*

Very poorly drained and poorly drained, nearly level soils in broad depressions

This association is mainly in large, nearly level, wet depressions, or bays or ponds. Among these areas are Cecil Bay, No Mans Friend Pond, Heart Pine Pond, Big Pond, and Giddens Pond, all of which are in the middle and south-central parts of Cook County. Slopes are about 2 percent or less.

This association occupies 2 percent of the two counties. It is 65 percent Bayboro soils, 20 percent Olustee soils, and 15 percent the less extensive Mascotte and Alapaha soils.

Bayboro soils are very poorly drained. Typically, the surface layer is black mucky loam about 14 inches thick. Beneath this layer is dark grayish-brown fine sandy loam about 8 inches thick. The subsoil extends to a depth of 70 inches. To a depth of about 58 inches, it is dark-gray clay. Below that depth, it is sandy clay that has a few pockets of sand.

Olustee soils are on higher parts of the landscape than Bayboro soils. They are poorly drained. Typically, the surface layer is dark-gray sand about 7 inches thick. The subsoil extends to a depth of 60 inches. It is very dark grayish-brown, weakly cemented sand and dark-brown sand in the upper part; light brownish-gray sand mottled with shades of brown and gray in the middle part; and gray sandy clay loam mottled with yellowish brown and strong brown in the lower part.

Of the less extensive soils, the poorly drained Mascotte and Alapaha soils are typically on the rim or outer edge of the Bayboro soils.

None of the acreage in this association is used for crops or pasture. The soils are used for trees, mainly hardwoods. The Bayboro soils require drainage to remove the surface water, if pines are to replace the hardwoods. Olustee soils can be cultivated or pastured if proper fertilization and drainage practices are used. They support a good growth of pines.

This association has severe limitations for most nonfarm uses commonly associated with town and country development because the water table is seasonally high and flooding is frequent.

7. *Fuquay-Cowarts association*

Well-drained, very gently sloping to gently sloping soils on narrow ridges and knobs

The largest area of this association is adjacent and parallel to the flood plain of Warrior Creek, in the northeastern part of Colquitt County. The landscape is one of narrow ridgetops, knobs, and short side slopes. Many areas are rough and choppy, and some are eroded. Slopes range from about 2 to 8 percent.

This association makes about 4 percent of the two counties. It is 55 percent Fuquay soils, 30 percent Cowarts soils, and 15 percent the less extensive Carnegie, Sunsweet, Esto, Kershaw, and Alapaha soils.

Fuquay soils are on the broader ridges and sides of ridges. Typically, the surface layer is grayish-brown loamy sand about 6 inches thick. Below this, to a depth of 24 inches, is light olive-brown loamy sand. The subsoil extends to a depth of about 72 inches. To a depth of 32 inches, it is friable, yellowish-brown sandy loam. Between a depth of 32 and about 42 inches, it is yellowish-brown sandy clay loam mottled with yellowish red. The lower part of the subsoil is mottled light yellowish-brown sandy clay loam in the upper 10 inches and gray sandy clay mottled with shades of yellow and red in the lower 12 inches.

Cowarts soils are on the narrower ridges, in broken areas, and on the steeper sides of ridges. Typically, the surface layer is dark grayish-brown loamy sand about 7 inches thick. The subsoil extends to a depth of 62 inches. It is strong-brown sandy clay loam mottled with red, brownish yellow, and light gray below a depth of 17 inches. The content of red mottles increases as depth increases. Coarse sand grains are common on the surface and in the subsoil. A few quartz and iron pebbles are on the surface in many places.

Of the less extensive soils, the well-drained Carnegie, Sunsweet, and Esto soils are on ridgetops and sides of ridges; the excessively drained Kershaw soils are on fairly smooth ridges; and the poorly drained Alapaha soils are on low flats and in intermittently ponded areas.

A small part of the acreage is used for crops. Corn, cotton, and peanuts are the main crops. A moderate part of the acreage is used for pasture; however, the majority of the acreage is used for trees for the production of pulpwood and lumber. Most of this association is privately owned.

This association has only slight to moderate limitations for most nonfarm uses commonly associated with town and country development. Cowarts soils are limited mainly because they have slow permeability and are gently sloping.

8. *Osier-Pelham association*

Very poorly drained and poorly drained, nearly level soils on flood plains

This association is one of nearly level soils along flood plains of rivers, creeks, and branches. The flood plains receive a thin deposit of fresh soil material during the many times each year they are flooded. Most of the alluvium is recent, but there are areas of old alluvium that normally are flooded only a few times each year.

This association makes up about 11 percent of the two counties. It is about 37 percent Osier soils, 20 percent Pelham soils, and 43 percent the less extensive Rains, Dunbar, Ocilla, and Chipley soils.

Osier and Pelham soils are closely intermingled on flood plains of the Little and Ochlockonee Rivers and along creeks and branches in Colquitt and Cook Counties. Osier soils are mainly coarse textured. They are poorly drained to very poorly drained. Typically, the surface layer is dark-gray material of variable texture, ranging from sand to fine sandy loam, about 3 inches thick. This overwash layer in many places is stratified with lenses of sand. Below the surface layer, to a depth of about 62 inches, is stratified sandy material. It is mainly gray mottled sand in the upper part, light brownish-gray mottled coarse sand in the middle part, and dark grayish-brown sand mottled with light olive gray in the lower part.

Pelham soils are poorly drained. Typically, the surface layer is very dark gray loamy sand about 6 inches thick. Beneath this layer is dark-gray loamy sand that extends to a depth of about 28 inches. The subsoil is gray sandy clay loam mottled with light yellowish brown and gray to a depth of about 46 inches and yellowish-brown sandy clay loam mottled with light gray, yellowish red, and red below that depth.

Of the less extensive soils, the poorly drained Rains soils are on flats and in depressions of stream terraces adjacent to Osier and Pelham soils, but on slightly higher positions; and the somewhat poorly drained Dunbar and Ocilla soils and the moderately well drained Chipley soils are all on stream terraces adjacent to flood plains, but on slightly higher positions than Rains soils.

More than 97 percent of this association is wooded because the major soils are wet and are subject to flooding.

Hardwoods are dominant, but there is some pine. A very small acreage is used for pasture. Cultivated crops are not suited. Nearly all the acreage is privately owned.

This association has severe limitations for most nonfarm uses commonly associated with town and country development because the soils have a seasonal high water table and are frequently flooded.

Descriptions of the Soils

This section describes the soil series and mapping units in Colquitt and Cook Counties. Each soil series is described in considerable detail, and then, briefly, each mapping unit in that series. Unless specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils. Unless otherwise stated, the colors given in the descriptions are those of a moist soil.

Following the names of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit are the capability unit and woodland group to which the mapping unit has been assigned. The page for the description of each capability unit can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The approximate acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary at the back of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*6*).[2]

A given soil series in Colquitt and Cook Counties can be identified by a different name in a recently published soil survey of an adjacent county. Such differences in name result from changes in the concepts of soil classification that have occurred since publication. The characteristics of the soil series described in this survey are considered to be within the range defined for that series. In those instances where a soil series has one or more features outside the defined range, the differences are explained.

[2] Italic numbers in parentheses refer to Literature Cited, p. 65.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soils	Colquitt County	Cook County	Total acreage	Extent
	Acres	*Acres*	*Acres*	*Percent*
Alapaha soils	85, 315	28, 935	114, 250	22. 4
Albany sand	2, 010	1, 765	3, 775	. 8
Bayboro mucky loam	0	6, 720	6, 720	1. 3
Carnegie sandy loam, 5 to 8 percent slopes, eroded	9, 050	730	9, 780	1. 9
Carnegie sandy loam, 8 to 12 percent slopes, eroded	735	0	735	. 1
Chipley soils, frequently flooded	2, 090	615	2, 705	. 5
Cowarts loamy sand, 2 to 5 percent slopes	3, 670	125	3, 795	. 8
Cowarts loamy sand, 5 to 8 percent slopes	4, 260	460	4, 720	. 9
Dothan loamy sand, 0 to 2 percent slopes	3, 045	945	3, 990	. 8
Dothan loamy sand, 2 to 5 percent slopes	13, 220	515	13, 735	2. 7
Dunbar fine sandy loam, frequently flooded	2, 075	1, 660	3, 735	. 7
Esto complex, 2 to 8 percent slopes	610	335	945	. 2
Fuquay loamy sand, 1 to 4 percent slopes	24, 245	16, 120	40, 365	7. 9
Grady soils	1, 205	2, 370	3, 575	. 7
Irvington loamy sand	4, 220	4, 715	8, 935	1. 8
Kershaw sand, 0 to 5 percent slopes	5, 840	4, 370	10, 210	2. 0
Leefield loamy sand	20, 760	20, 765	41, 525	8. 1
Mascotte sand	0	570	570	. 1
Ocilla loamy fine sand, frequently flooded	4, 400	175	4, 575	. 9
Ocilla loamy sand	1, 745	315	2, 060	. 4
Olustee sand	585	2, 100	2, 685	. 5
Orangeburg loamy sand, 3 to 6 percent slopes	655	0	655	. 1
Osier and Pelham soils	28, 515	21, 920	50, 435	9. 9
Rains fine sandy loam	6, 480	290	6, 770	1. 3
Robertsdale loamy sand	2, 985	890	3, 875	. 8
Stilson loamy sand	11, 235	4, 840	16, 075	3. 2
Stilson-Urban land complex	860	495	1, 355	. 2
Sunsweet sandy loam, 5 to 12 percent slopes, eroded	450	50	500	. 1
Tifton loamy sand, 0 to 2 percent slopes	6, 730	5, 365	12, 095	2. 4
Tifton loamy sand, 2 to 5 percent slopes	94, 568	19, 547	114, 317	22. 5
Tifton sandy loam, 2 to 5 percent slopes, eroded	5, 805	580	6, 385	1. 3
Tifton sandy loam, 5 to 8 percent slopes, eroded	9, 665	50	9, 715	1. 9
Tifton-Urban land complex, 2 to 8 percent slopes	3, 090	660	3, 750	. 8
Total	360, 128	148, 992	509, 120	100. 0

Alapaha Series

The Alapaha series consists of poorly drained soils, mainly along drainageways and in flat, low areas. Slopes are mainly less than 3 percent.

In a representative profile the surface layer is dark-gray loamy sand about 12 inches thick. Below this is about 14 inches of gray loamy sand. The subsoil is sandy clay loam that extends to a depth of 66 inches. The upper 16 inches is light gray and gray mottled with yellowish brown, strong brown, and red; the next 8 inches is brownish yellow mottled with light gray and red; and the lower 16 inches is red mottled with brownish yellow and red. Plinthite is below a depth of 32 inches.

Alapaha soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have fair tilth. The depth to which roots can penetrate is determined mainly by the depth of the water table during the growing season. Permeability is moderately slow in the horizons that contain plinthite. The available water capacity is low to medium.

Alapaha soils are extensive throughout both Colquitt and Cook Counties. The natural vegetation is chiefly mixed pines, sweetgum, blackgum, water oak, and red maple and an understory of gallberry, myrtle, and wiregrass. These soils are not generally suited to cultivation. A small acreage is used for pasture, to which the soils are only fairly well suited. Drainage, heavy fertilization, and adequate lime are needed for satisfactory growth of forage plants.

Representative profile of Alapaha loamy sand in an area of Alapaha soils, 1.2 miles south of Moultrie Drive-in-Theatre along U.S. Highway 319; 1 mile southeast along Georgia Highway 133; 0.8 mile east on county road; 0.3 mile north on county road; 40 feet east of road; Colquitt County:

Ap—0 to 6 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, granular structure; very friable; many roots; very strongly acid; abrupt, smooth boundary.

A1—6 to 12 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, granular structure; very friable; common roots; very strongly acid; clear, wavy boundary.

A2—12 to 26 inches, gray (10YR 5/1) loamy sand; weak, fine, granular structure; very friable; few roots; very strongly acid; clear, wavy boundary.

B21tg—26 to 36 inches, light-gray (10YR 7/1) sandy clay loam; few, fine, faint mottles of gray and common, medium, distinct mottles of yellowish brown; moderate, medium, subangular blocky structure; friable; patchy clay films on some ped surfaces; very strongly acid; gradual, wavy boundary.

B22tg—36 to 42 inches, gray (10YR 6/1) sandy clay loam; common, medium, distinct mottles of strong brown (7.5YR 5/8), yellowish brown (10YR 5/8), and red (2.5YR 4/8); moderate, medium, subangular blocky structure; friable; 8 percent plinthite; patchy clay films on ped surfaces; very strongly acid; gradual, wavy boundary.

B23t—42 to 50 inches, brownish-yellow (10YR 6/8) sandy clay loam; common, medium, prominent mottles of light gray (10YR 7/1) and red (2.5YR 4/8); moderate, medium, subangular blocky structure; friable; about 10 percent plinthite; patchy clay films on some ped surfaces; very strongly acid; gradual, wavy boundary.

B24t—50 to 66 inches, red (10R 5/8) sandy clay loam; common, coarse mottles of brownish yellow (10YR 6/8) and light gray (10YR 7/1); moderate, medium, subangular blocky structure; about 10 percent plinthite; friable; patchy clay films on ped surfaces; very strongly acid.

The A1 or Ap horizon ranges from dark gray and very dark gray to very dark grayish brown. It is loamy sand, sand, and sandy loam. The A horizon ranges from 22 to 30 inches in thickness. The Btg horizon ranges from gray to light gray. It is sandy clay loam or sandy loam. The Bt horizon is mottled with shades of red, brown, and gray. Plinthite makes up 5 to 35 percent of the profile, by volume.

Alapaha soils are associated mainly with Leefield, Mascotte, Olustee, and Ocilla soils. They are wetter than Leefield and Ocilla soils. They do not have the Bh horizon that is characteristic of Mascotte and Olustee soils.

Alapaha soils (Ai).—These soils are in low, flat areas along the upper parts of drainageways, and in areas adjacent to small streams. Areas are typically long, but are narrow to medium in width and about 50 to 150 acres in size. Slopes are 0 to 3 percent. These soils have the profile described as representative of the series.

Alapaha soils make up about 60 percent of the total acreage. Included with these soils in mapping are small areas of Leefield and Ocilla soils, areas of similar soils that do not have plinthite within a depth of 60 inches, and areas where the surface layer of the Alapaha soils ranges from sand to sandy loam.

During wet seasons, some low areas are flooded more than once each year for more than 2 days. The seasonal high water table is within a depth of 15 inches for about 3 to 6 months each year.

These soils are too wet (fig. 2) to be suitable for cultivation. They are used mostly for trees and are suited to this use. They are fairly well suited to pasture, such as bahiagrass, but drainage is needed for best results. Capability unit Vw-1; woodland group 2w2.

Albany Series

The Albany series consists of somewhat poorly drained soils that formed in thick beds of sandy and loamy material on low uplands. Slopes range from 0 to 2 percent, but are mainly less than 1 percent.

In a representative profile the surface layer is dark-gray sand about 6 inches thick. Below this, to a depth of 20 inches, is light brownish-gray sand. Between depths of 20 and 56 inches is mottled light yellowish-brown, light brownish-gray, brownish-yellow, yellowish-red, and light-gray sand. The subsoil to a depth of 66 inches is yellowish-brown sandy loam mottled with light gray, red, and yellowish red.

Albany soils are low in natural fertility, contain little organic matter, and are strongly acid to very strongly acid throughout. They have good tilth and a deep root zone. Permeability is moderate, and available water capacity is low.

Albany soils are not widely distributed throughout the two counties. The natural vegetation is mixed pine and hardwood forest and an understory of gallberry, waxmyrtle, and wiregrass. Most of the acreage is wooded. Slash and longleaf pine are dominant. A small acreage is used for pasture, to which the soils are fairly well suited. Some areas are cultivated and are planted to corn, soybeans, tobacco, and truck crops. Drainage is needed in cultivated areas because the water table is seasonally high. The water table falls sharply late in spring, and the soils are often droughty in summer.

Representative profile of Albany sand, 0.9 mile south of Pine Grove Church along county road to crossroad; 2 miles

Figure 2.—**Trumpet plants on Alapaha soils. The presence of these native plants indicates the poor drainage and internal wetness of the soils.**

west along county road; 30 feet east of road in pasture; Colquitt County:

A1—0 to 6 inches, dark-gray (10YR 4/1) sand; single grained; loose; many fine roots; strongly acid; abrupt, smooth boundary.

A21—6 to 20 inches, light brownish-gray (2.5Y 6/2) sand that has few streaks of dark gray; single grained; loose; common fine roots; very strongly acid; clear, wavy boundary.

A22—20 to 30 inches, light yellowish-brown (2.5Y 6/4) sand; many, fine, faint mottles of light gray; single grained; loose; very strongly acid; gradual, wavy boundary.

A23—30 to 56 inches, mottled light brownish-gray (2.5Y 6/2), brownish-yellow (10YR 6/6), yellowish-red (5YR 4/6), and light-gray (10YR 7/1) sand; single grained; loose; very strongly acid; clear, wavy boundary.

B2t—56 to 66 inches, yellowish-brown (10YR 5/8) sandy loam; common, medium, distinct and prominent mottles of yellowish red (5YR 4/8), light gray (N 7/0), and red (2.5YR 4/8); weak, medium, granular structure; very friable; sand grains coated and bridged with clay; very strongly acid.

The A horizon ranges from 48 to 56 inches in thickness. The A1 horizon ranges from gray to very dark gray. The B2t horizon ranges from sandy loam to sandy clay loam. The percentage of yellow and gray mottles in the profile is highly variable.

Albany soils are commonly among Leefield, Ocilla, Kershaw, and Alapaha soils. They are in higher positions on the landscape and are better drained than Alapaha soils. They are in lower positions than Kershaw soils and are not so well drained as those soils. They have a thicker A horizon than Leefield and Ocilla soils.

Albany sand (Ad).—This somewhat poorly drained soil is sandy to a depth of 48 to 56 inches. It is seasonally wet. The seasonal high water table is at a depth of 15 to 30 inches for 1 to 2 months each year.

Included with this soil in mapping are small areas of Kershaw, Leefield, and Ocilla soils.

This Albany soil is suited to pines. Most of the acreage is pine forest. A small acreage is cultivated, and some areas are pastured. The highly fluctuating water table and the slow internal drainage generally make artificial drainage necessary in cultivated areas.

Excess water is the main concern. The amount of drainage needed depends on the crop. In cultivated areas this soil can be drained through a system of open ditches or covered tile drains.

If drainage is adequate and enough plant residue is returned to the soil to maintain good tilth, suitable crops can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by

regularly applying lime and fertilizer according to plant needs. Capability unit IIIw-1; woodland group 3w2.

Bayboro Series

The Bayboro series consists of very poorly drained soils that formed in acid sediment chiefly of marine origin in shallow, saucerlike depressions and bays. Slopes are 0 to 2 percent.

In a representative profile the surface layer is black mucky loam about 14 inches thick. Below this is an 8-inch layer of dark grayish-brown fine sandy loam. The upper 36 inches of the subsoil is dark-gray clay. The lower 12 inches is gray sandy clay that contains a few pockets of sand.

Bayboro soils are low in natural fertility, contain much organic matter in the surface layer and little in the layers beneath, and are very strongly acid throughout. They have poor tilth. The depth of the root zone is determined mainly by the depth to the water table during the growing season. Permeability is slow, and the available water capacity is high. Runoff is very slow to ponded. In places water stands on or near the surface for long periods during wet seasons.

Bayboro soils are not extensive and occur mostly in large bay areas (fig. 3) in Cook County. The natural vegetation is aquatic and consists of common cypress, baldcypress, water tupelo, hurrah bushes, and various grasses and sedges. These soils are not cultivated in Cook County.

Representative profile of Bayboro mucky loam, 1.2 miles north of Cecil city limits sign on Interstate Highway 75; 175 yards west into Heart Pine Pond; Cook County:

A1—0 to 14 inches, black (N 2/0) mucky loam; weak, fine, granular structure; very friable; many fine roots; more than 30 percent organic matter; very strongly acid; abrupt, wavy boundary.

A2—14 to 22 inches, dark grayish-brown (10YR 4/2) fine sandy loam; massive; very friable; common fine roots; very strongly acid; clear, smooth boundary.

B21tg—22 to 58 inches, dark-gray (10YR 4/1) clay; moderate, medium, angular blocky structure; very plastic when wet; patchy clay films on ped surfaces; few roots; very strongly acid; clear, smooth boundary.

B22tg—58 to 70 inches, gray (10YR 5/1) sandy clay; moderate, medium, subangular blocky structure; plastic when wet; clay films on vertical ped surfaces; very strongly acid.

The A1 horizon ranges from 12 to 14 inches in thickness. It is about 30 to 40 percent organic matter. The B2tg horizon is gray, light gray, or dark gray and in places has few to common mottles in shades of brown. It ranges from clay to sandy clay. Pockets of sandy loam or loamy sand are in the B22tg horizon

Figure 3.—No Mans Friend Pond, a depression in Bayboro mucky loam. Several large cypress ponds cover several thousand acres of this soil.

in places. Root channels range from none to common throughout the profile.

The Bayboro soils in Colquitt and Cook Counties have an A horizon that is more than 30 percent organic matter, which exceeds the defined limits of the Bayboro series. This difference does not affect the use or behavior of the soils.

Bayboro soils are mainly among Olustee, Leefield, and Alapaha soils. They are much wetter and are in lower positions on the landscape than Olustee and Leefield soils. They are ponded and are more poorly drained than Alapaha soils.

Bayboro mucky loam (Bm).—This very poorly drained soil is in depressions. It occurs only in Cook County.

Included with this soil in mapping are small areas of peat and areas where the surface layer is loam and fine sandy loam.

This soil has a seasonal high water table at or near the surface for long periods, and ponding is common. Drainage is generally not feasible. The soil is not generally suited to cultivation. Even if it is drained, tilth is only fair. Pines do well if the surface water is removed. All the acreage is in mixed forest. Capability unit Vw-1; woodland group 2w9.

Carnegie Series

The Carnegie series consists of well-drained soils that formed in thick beds of loamy and clayey marine sediments on uplands. Slopes range from 5 to 12 percent.

In a representative profile the surface layer is very dark grayish-brown sandy loam about 5 inches thick. The subsoil is sandy clay loam to a depth of 50 inches. The top 15 inches is strong brown, the next 12 inches is strong brown mottled with dark red and olive yellow, and the next 18 inches is mottled olive yellow, yellowish brown, and dark red. Between depths of 50 and 66 inches, the subsoil is reddish-yellow sandy clay mottled with light gray, yellowish red, and red. Small, hard iron concretions are typical on the surface and throughout most of the profile. Plinthite is at a depth of about 20 inches.

Carnegie soils are low to moderate in natural fertility, contain little organic matter, and are very strongly acid throughout. They mainly have good tilth and a moderately deep root zone. Permeability is slow, and the available water capacity is medium.

Carnegie soils are moderately small in extent in the two counties. The native vegetation is mixed hardwood and pine forest and an understory of wiregrass. These soils are fairly well suited to most locally grown crops. They are well suited to pasture and pines. Most of the acreage is in pines.

Representative profile of Carnegie sandy loam, 5 to 8 percent slopes, eroded, 1.5 miles west of Doerun Baptist Church along Georgia Highway 270; on south side of road; Colquitt County:

Apcn—0 to 5 inches, very dark grayish-brown (10YR 3/2) sandy loam; weak, fine, granular structure; very friable; many hard iron concretions, 1/8 to 3/4 inch in diameter; many fine roots; strongly acid; abrupt, wavy boundary.

B21tcn—5 to 20 inches, strong-brown (7.5YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; common iron concretions; very strongly acid; gradual, smooth boundary.

B22t—20 to 32 inches, strong-brown (7.5YR 5/6) sandy clay loam; many, medium, prominent mottles of dark red (7.5R 3/8) and olive yellow (2.5Y 6/8); moderate, medium, subangular blocky structure; firm; few clay films on ped surfaces; 3 percent hard and soft iron concretions; about 8 percent plinthite; common, fine, distinct, light-gray flakes of material that has an abrupt boundary; very strongly acid; gradual, wavy boundary.

B23t—32 to 50 inches, coarsely mottled olive-yellow (2.5Y 6/8), yellowish-brown (10YR 5/8), and dark-red (7.5R 3/8) sandy clay loam; moderate, medium, subangular blocky structure; firm; patchy clay films on some ped surfaces; 15 percent soft plinthite, by volume; common, fine, distinct, light-gray flakes of material that has an abrupt boundary; very strongly acid; gradual, wavy boundary.

B24t—50 to 66 inches, reddish-yellow (7.5YR 6/6) sandy clay; many, medium, prominent mottles of light gray (10YR 7/1), yellowish brown (10YR 5/8), and red (7.5R 5/6); moderate, medium, angular blocky structure; firm; patchy clay films on some ped surfaces; about 15 percent soft plinthite, by volume; very strongly acid.

The Ap horizon is 5 to 20 percent iron concretions and is very dark grayish brown to yellowish brown. The Bt horizon ranges from yellowish brown to yellowish red and, beginning at a depth of about 20 inches, contains many mottles or is predominantly mottled in various shades of brown, yellow, red, and light gray. It is mostly sandy clay loam, but ranges to sandy clay in the lower part. The B21t horizon is 5 to 20 percent iron concretions. The percentage decreases to less than 5 percent in the underlying horizons. Plinthite is at a depth of 18 to 24 inches and makes up 5 to 25 percent of the material, by volume.

Carnegie soils are commonly associated with Tifton and Sunsweet soils. They closely resemble Sunsweet soils in color, but are less clayey in the upper part of the B horizon and are deeper over plinthite. They are shallower over plinthite than Tifton soils.

Carnegie sandy loam, 5 to 8 percent slopes, eroded (CoC2).—This well-drained soil is commonly in narrow bands between ridges and drainageways. It has the profile described as representative of the series. The plow layer normally extends into the upper part of the subsoil. In patches the plow layer consists wholly of the original surface layer, and in others the subsoil is exposed. A few rills and shallow gullies have formed in most areas.

Included with this soil in mapping are areas of closely related soils that are deeper than 24 inches to a layer containing plinthite. Also included are small areas of Sunsweet and Cowarts soils.

Tilth is good, except where the subsoil is exposed at the surface. Erosion is a severe hazard (fig. 4). Most of the acreage is used for pasture, to which it is well suited. A moderate acreage in Colquitt County is used for pines, to which it is well suited. A small acreage is used for cotton and corn, to which it is fairly well suited if proper erosion control practices are used.

If this soil is needed for row crops, such crops can be used occasionally under careful management. A complete water disposal system is essential. Terraces are difficult to maintain. Generally, a heavy duty cropping system that uses straight rows or stripcropping is better than other methods.

Good management improves productivity and tilth and holds soil losses from erosion within allowable limits. Lime and fertilizer should be applied regularly according to plant needs. Crop residue should be shredded and left on the surface between crop seasons, and perennial grasses or legumes should be used in the cropping sys-

Figure 4.—**Uncontrolled roadside erosion on Carnegie sandy loam, 5 to 8 percent slopes, eroded.**

tem. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practice. An example of a suitable cropping system on a terraced slope of 6 percent is 1 year of small grain followed by 1 year of corn. All residue and aftermath are left on the surface between cropping seasons.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed on the contour, terraced, or stripcropped. A field border of perennial grass reduces erosion and weed growth at the edge of fields. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IVe-4; woodland group 2o1.

Carnegie sandy loam, 8 to 12 percent slopes, eroded (CoD2).—This well-drained soil is on short slopes along streams. Shallow gullies, rills, and gall spots have formed in most places.

Included with this soil in mapping are small areas of Sunsweet and Esto soils.

This Carnegie soil has good tilth, except where the subsoil is exposed. Steep slopes and erosion make it unsuitable for cultivated crops. A small acreage is used for pasture, mainly bahiagrass, which is fairly well suited, but most of the acreage is used for pines, which are well suited. Capability unit VIe-2; woodland group 2o1.

Chipley Series

The Chipley series consists of moderately well drained, sandy soils that formed in thick beds of sandy material along stream terraces. Areas are small. Slopes are 0 to 2 percent.

In a representative profile the surface layer is dark grayish-brown fine sand about 6 inches thick. Below this is a 9-inch layer of brown fine sand. In sequence downward, the underlying material is 15 inches of pale-brown fine sand; 22 inches of light yellowish-brown fine sand mottled with yellow; and 20 inches of white sand mottled with yellow.

Chipley soils are low in natural fertility, contain little organic matter, and are strongly acid to very strongly acid throughout. They have good tilth and a deep root zone. Permeability is rapid. The available water capacity is very low, but the seasonal high water table is at a depth of 40 inches or less for 60 days or more each year.

Chipley soils are not widely distributed throughout the two counties, and the total acreage is small. The natural vegetation is mainly pines and oaks and an understory of myrtle, gallberry, and palmetto. Most areas are used for trees. A few are used for pasture. These soils are subject to overflow several times each year and are generally not cultivated. They also have a seasonal high water table and

thus are wet in winter and droughty late in spring and in summer.

Representative profile of Chipley fine sand in an area of Chipley soils, frequently flooded, 0.3 mile southwest of Leila Church along paved county road; 100 yards east of road at edge of bar pit; Colquitt County:

A1—0 to 6 inches, dark grayish-brown (10YR 4/2) fine sand; single grained; loose; common fine roots; strongly acid; clear, wavy boundary.

A2—6 to 15 inches, brown (10YR 5/3) fine sand; single grained; loose; few fine roots; very strongly acid; gradual, wavy boundary.

C1—15 to 30 inches, pale-brown (10YR 6/3) fine sand; pockets of common, medium, distinct, light-gray (2.5Y 7/2) clean sand grains; single grained; loose; very strongly acid; gradual, wavy boundary.

C2—30 to 52 inches, light yellowish-brown (2.5Y 6/4) fine sand; common, medium, distinct mottles of yellow (10YR 7/6); pockets of clean white sand; single grained; loose; very strongly acid; gradual, wavy boundary.

C3—52 to 72 inches, white (2.5Y 8/2) sand; few, coarse, distinct mottles of yellow (10YR 7/6); single grained; loose; very strongly acid.

The A horizon is fine sand or loamy sand. The A1 horizon is 4 to 8 inches thick and ranges from dark grayish brown to very dark gray. The C horizon contains mottles that range from few to common and from white (clean sand grains) to yellowish brown or yellow. High-chroma mottles are the result of iron oxide coatings on the sand grains. This soil is sandy to a depth of more than 72 inches.

Chipley soils are among Ocilla, Dunbar, and Rains soils. They are better drained than those soils. They are coarser textured throughout than Ocilla and Rains soils. They do not have the moderately fine textured and fine textured B horizon that is typical of Dunbar soils.

Chipley soils, frequently flooded (Cy).—This moderately well drained soil is on stream terraces. It is sandy throughout. It has the profile described as representative of the series, but the surface layer in some areas ranges from fine sand to loamy sand.

Included with this soil in mapping are small areas of Ocilla and Dunbar soils.

This Chipley soil is flooded several times each year for more than 2 days. It has a seasonal high water table at a depth of 20 to 40 inches for 1 to 2 months each year. It is well suited to pines. Nearly all the acreage is used for trees, mainly because overflow is a hazard and the available water capacity is low. A few areas are in pasture. If this soil is protected from flooding, fertilized, and otherwise well managed, it can be used for such crops as corn, small grain, bahiagrass, and Coastal bermudagrass. Row crops can be grown year after year without soil loss, but plants respond better under a good cropping system, for example, 2 years of corn followed by 2 years of perennial sod. Split applications of fertilizer are needed because nutrients are readily leached out. Capability unit IVw-3; woodland group 2w2.

Cowarts Series

The Cowarts series consists of well-drained soils that formed in thick beds of mottled loamy material on undulating uplands. Slopes range from 2 to 8 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand about 7 inches thick. In many places it contains a few quartz and iron pebbles. The subsoil is sandy clay loam. The top 10 inches is strong brown, the next 7 inches is strong brown mottled with red and brownish yellow, the next 12 inches is strong brown mottled with red and light gray, and the bottom 26 inches is mottled yellowish brown, red, and light gray. Red mottles increase with increasing depth. Coarse sand grains are common on the surface and in the subsoil. Plinthite is at a depth of about 17 inches.

Cowarts soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth in uneroded areas, but response of crops to management is only fair to good. The root zone is moderately deep. Permeability is slow, and the available water capacity is medium.

Cowarts soils are not extensive throughout the two counties. The natural vegetation is chiefly pines and a few hardwoods. These soils are only fairly well suited to cultivation. Many fields are cultivated, however, and corn and cotton are the main crops. A small acreage is used for pasture. The dominant acreage is in pines, to which the soils are well suited.

Representative profile of Cowarts loamy sand, 5 to 8 percent slopes, 200 yards south of Midway Church; Colquitt County:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; few, small, white quartz and iron pebbles 1/16 to 3/8 inch in diameter; few fine roots; very strongly acid; abrupt, smooth boundary.

B21t—7 to 17 inches, strong-brown (7.5YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; sand grains coated and bridged with clay; very strongly acid; clear, wavy boundary.

B22t—17 to 24 inches, strong-brown (7.5YR 5/6) sandy clay loam; common, medium, distinct mottles of red (2.5YR 4/8) and brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; friable; coarse sand grains common; 5 percent plinthite; very strongly acid; clear, wavy boundary.

B23t—24 to 36 inches, strong-brown (7.5YR 5/6) sandy clay loam; common, coarse, prominent mottles of red (10R 4/8) and few prominent mottles of light gray (N 7/0); moderate, medium, subangular blocky structure; firm; clay films on some ped surfaces; 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—36 to 62 inches, mottled yellowish-brown (10YR 5/6), red (2.5YR 4/8), and light-gray (10YR 7/1) sandy clay loam; moderate, medium, subangular blocky structure; clay films on some ped surfaces; firm; few coarse sand grains; 15 percent plinthite; very strongly acid.

The Ap horizon ranges from grayish brown to dark grayish brown. The content of coarse sand grains and quartz and iron pebbles varies from place to place and ranges from few to common. The B22t horizon has matrix colors that range from yellowish brown to yellowish red. It ranges from sandy loam to sandy clay loam and is about 18 to 25 percent clay. Gray colors in the Bt horizon are inherent and are not caused by wetness. Plinthite makes up 5 to 15 percent of the soil mass.

Cowarts soils are mainly among Fuquay, Kershaw, and Dothan soils. They are shallower over plinthite than Fuquay and Dothan soils. They are much finer textured throughout than Kershaw soils.

Cowarts loamy sand, 2 to 5 percent slopes (CqB).—This well-drained soil is on uplands. It is on ridgetops. Areas are mostly less than 15 acres in size.

Included with this soil in mapping are small areas of Dothan and Fuquay soils.

This Cowarts soil has good tilth and a moderately deep

root zone. The erosion hazard is moderate. Some of the acreage is used for corn, cotton, and peanuts, all of which are fairly well suited. Most of the acreage is in pines and pasture (fig. 5). In cultivated areas, the farmer generally has a choice of four erosion control practices. He can cultivate in straight rows across the slope, on the contour without terraces, on the contour with terraces, or stripcrop. The method used depends on the crops grown and the extent of the limitations.

Several management practices contribute to maintaining soil productivity and good tilth and to holding soil losses from erosion within allowable limits. Among these are regular applications of lime and fertilizer according to plant needs; good management of crop residues, generally by shredding and leaving them on the surface between crop seasons; and use of a suitable cropping system. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practice. An example of a suitable cropping system on a slope of 3 percent that is 200 feet long is 2 years of grass followed by 2 years of cotton, in straight rows.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IIe-4; woodland group 2o1.

Cowarts loamy sand, 5 to 8 percent slopes (CqC).—This soil is on uplands. It is on short side slopes between ridgetops and drainageways. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Carnegie soils.

This Cowarts soil has good tilth, except in areas where the subsoil is exposed. Erosion is a severe hazard; therefore, the soil is not suited to cultivation. Most of the acreage is in pines and pasture.

If needed, this soil can be used occasionally for row crops, under careful management. A complete water disposal system is essential. Terraces are difficult to maintain. Generally, a heavy duty cropping system that uses straight rows or stripcropping is better than other methods.

Good management improves productivity and tilth and holds soil losses from erosion within allowable limits. Among the measures needed are regular applications of lime and fertilizer according to plant needs; good management of crop residue, generally by shredding and leaving it on the surface between crop seasons; and perennial grasses or legumes in the cropping system. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practice. An

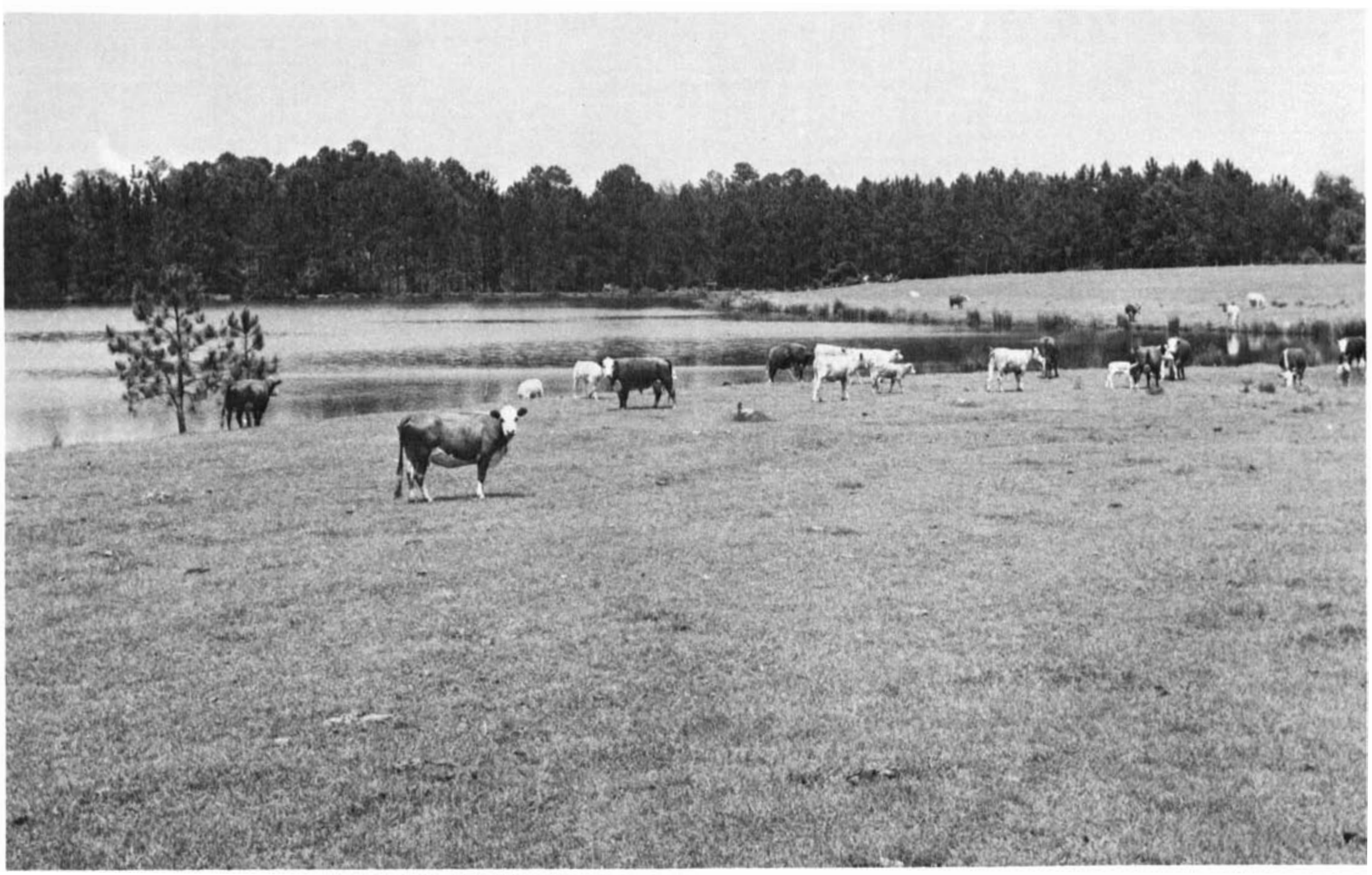

Figure 5.—Cattle grazing a bahiagrass pasture on Cowarts loamy sand, 2 to 5 percent slopes.

example of a suitable cropping system on a 7-percent slope that is 150 feet long is 2 years of sod, such as Coastal bermudagrass, followed by 1 year of corn or some other row crop.

A field border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IVe-4; woodland group 2o1.

Dothan Series

The Dothan series consists of well-drained soils that formed in beds of loamy material on uplands. Slopes range from 0 to 5 percent.

In a representative profile the surface layer is grayish-brown loamy sand about 7 inches thick. The subsoil extends to a depth of 60 inches and is mainly sandy clay loam. The upper 35 inches is yellowish brown, but below a depth of about 30 inches it is mottled with red. The lower part is brownish yellow and yellowish brown mottled with shades of red and yellow. Plinthite is below a depth of about 30 inches.

Dothan soils are low to moderate in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a moderately deep to deep root zone. Permeability is moderately slow, and the available water capacity is medium.

Dothan soils occur throughout the two counties. The natural vegetation is chiefly mixed pine and hardwood forest and an understory of native grasses, mostly wiregrass. These soils respond well to management, including heavy fertilization, and are well suited to most locally grown crops. They are considered among the best soils for farming. Most of the acreage is cultivated and pastured. A moderate acreage is used for pines, to which the soils also are well suited.

Representative profile of Dothan loamy sand, 2 to 5 percent slopes, 3 miles north of Pine Grove Church along county road; 0.7 mile west along paved road; 70 feet north of road in cultivated field; Colquitt County:

Ap—0 to 7 inches, grayish-brown (10YR 5/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid; abrupt, smooth boundary.

B1t—7 to 10 inches, yellowish-brown (10YR 5/4) sandy loam; moderate, medium, granular structure; very friable; common fine roots; very strongly acid; clear, wavy boundary.

B21t—10 to 30 inches, yellowish-brown (10YR 5/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; few fine roots in upper part; very strongly acid; gradual, wavy boundary.

B22t—30 to 42 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, medium, prominent mottles of red (10R 4/8); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; few iron concretions; 5 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—42 to 54 inches, brownish-yellow (10YR 6/6) sandy clay loam; many, medium, prominent mottles of yellowish red (5YR 4/8) and red (10R 4/8); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; few iron concretions; 5 to 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—54 to 60 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, prominent mottles of pale yellow (2.5Y 7/4), red (10R 4/8), and very pale brown (10YR 7/3); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; 10 percent plinthite; very strongly acid.

The Ap horizon ranges from grayish brown to dark grayish brown. The A horizon ranges from 6 to 14 inches in thickness. In most places a few iron concretions are on the surface and in the profile. The B2t horizon is yellowish brown to brownish yellow to a depth of 30 to 48 inches; below that depth it is mainly brownish yellow or yellowish brown mottled with shades of red, brown, yellow, and gray. Plinthite is at a depth of 30 to 48 inches and makes up 5 to 10 percent of the soil.

Dothan soils are among Tifton, Stilson, and Fuquay soils. They closely resemble Tifton soils, but have fewer iron pebbles in the solum and a slightly less clayey B horizon. They do not have the thick, sandy A horizon that is characteristic of Fuquay and Stilson soils. They are better drained than Stilson soils.

Dothan loamy sand, 0 to 2 percent slopes (DoA).—This well-drained soil is on ridgetops. Areas are generally less than 15 acres in size.

Included with this soil in mapping are small areas of Tifton and Fuquay soils.

This Dothan soil is well suited to most locally grown crops and is used extensively for corn, peanuts, and cotton. It responds well to management, including heavy fertilization. Most of the acreage is cultivated. This soil is well suited to pasture and to pine forest.

Erosion is not a hazard. The main management need is to return large amounts of plant residue to the soil frequently to improve its fertility and water-holding capacity. Corn can be grown year after year if only the grain is harvested and all crop residue and aftermath are left on the surface between crop seasons. Capability unit I-1; woodland group 2o1.

Dothan loamy sand, 2 to 5 percent slopes (DoB).—This well-drained soil is on uplands. It generally is on tops and sides of ridges. It has the profile described as representative of the series. Areas are fairly small.

Included with this soil in mapping are small areas of Tifton, Fuquay, and Cowarts soils.

This Dothan soil responds well to management and is considered one of the best soils for farming. It is well suited to most locally grown crops and is extensively used for corn, peanuts, cotton, tobacco, and truck crops. It also is well suited to pasture and pine forest.

In cultivated areas, the farmer generally has a choice of four erosion control practices. He can cultivate in straight rows across the slope, on the contour without terraces, or on the contour with terraces, or he can stripcrop. The method used depends on the crops grown and the extent of the limitations.

Several management practices contribute to maintaining soil productivity and good tilth and to holding soil losses from erosion within allowable limits. Among these are regular applications of lime and fertilizer according to plant needs; good management of crop residue, generally by shredding and leaving it on the surface between crop seasons; and a suitable cropping system. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practice. An example of a suitable cropping system on a terraced slope of 3 percent is corn grown year after year.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field

border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IIe–1; woodland group 2o1.

Dunbar Series

The Dunbar series consists of somewhat poorly drained soils that formed in thick beds of sandy to clayey material on stream terraces. Slopes range from 0 to 2 percent, but are mainly 1 percent or less.

In a representative profile the surface layer is very dark gray fine sandy loam 6 inches thick. Beneath this is an 8-inch layer of light olive-brown fine sandy loam. The subsoil extends to a depth of about 58 inches. The top 5 inches is brown clay loam mottled with gray and red. The rest is dominantly gray clay and sandy clay loam mottled with shades of brown and red. The underlying material to a depth of 68 inches is mainly light-gray sand.

Dunbar soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth. The root zone is mainly moderately deep, depending on depth to the water table during the growing season. Permeability is slow, and the available water capacity is medium.

The natural vegetation is oak, sweetgum, blackgum, pine, and hickory and an understory of gallberry, palmetto, and other shrubs. These soils are not cultivated, mainly because they are subject to overflow several times a year. A few areas are used for pasture. Most of the acreage is used for trees, to which the soils are well suited.

Representative profile of Dunbar fine sandy loam, frequently flooded, 3 miles northeast of Buck Creek Church along paved road; 100 feet north at road on edge of bar pit; Colquitt County:

A1—0 to 6 inches, very dark gray (10YR 3/1) fine sandy loam; weak, fine, granular structure; very friable; roots matted; very strongly acid; clear, wavy boundary.

A2—6 to 14 inches, light olive-brown (2.5Y 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; gradual, wavy boundary.

B21t—14 to 19 inches, brown (7.5YR 4/4) clay loam; common, medium, prominent mottles of red (2.5YR 4/8) and few, fine, prominent mottles of gray; moderate, medium, angular blocky structure; firm; common medium roots in upper part; clay films on some ped surfaces; very strongly acid; clear, wavy boundary.

B22tg—19 to 30 inches, gray (N 5/0) clay; common, medium, prominent mottles of dark red (2.5YR 3/6) and common, medium, distinct mottles of dark yellowish brown (10YR 4/4); moderate, medium, angular blocky structure; firm; clay films on ped surfaces; very strongly acid; gradual, wavy boundary.

B3tg—30 to 58 inches, gray (5Y 5/1) sandy clay loam; common, coarse, distinct mottles of yellowish brown (10YR 5/4) and few, fine, prominent mottles of strong brown (7.5YR 5/8) and dark red (2.5YR 3/6); moderate, medium, angular blocky structure; firm; clay films on many ped surfaces; very strongly acid; clear, wavy boundary.

C—58 to 68 inches, light-gray (2.5Y 7/2) sand and lumps of loamy sand; common, coarse, distinct mottles of strong brown (7.5YR 5/8) and gray (N 6/0); single grained; loose; very strongly acid.

The A horizon ranges from 8 to 16 inches in thickness. The B2t horizon ranges from clay to sandy clay and clay loam. The B21t horizon ranges from about 3 to 8 inches in thickness and is brown to light yellowish-brown clay loam mottled with red, gray, and strong brown. The B22tg horizon is gray mottled with dark red, yellowish red, dark yellowish brown, or strong brown. Gray mottles that have chroma of 2 or less are in the upper 10 inches of the B2t horizon. The C horizon is sand, loamy sand, or sandy loam.

Dunbar soils are among Ocilla, Rains, and Chipley soils. They have a more clayey B horizon than Ocilla and Rains soils. They have a moderately fine textured and fine textured B horizon that Chipley soils do not have. They are better drained than Rain soils and not so well drained as Chipley soils.

Dunbar fine sandy loam, frequently flooded (Dx).—This somewhat poorly drained, nearly level soil is typically along stream terraces. Areas are moderate to small.

Included with this soil in mapping are small areas of Ocilla, Chipley, and Rains soils.

This Dunbar soil has a fluctuating seasonal high water table that is at a depth of 15 to 30 inches for 1 to 2 months each year. During wet seasons it is flooded several times each year for 2 to 7 days.

Nearly all the acreage is used for trees, which are well suited. A small acreage is in pasture. Fairly good results can be obtained under adequate drainage and fertilization. Most areas are suitable for cultivation only if they are drained and protected from overflow. Drained and protected areas are fairly well suited to corn, soybeans, truck crops, and bahiagrass. A suitable cropping system is corn grown year after year if crop residue is left on the surface between growing seasons. Capability unit IIIw–2; woodland group 2w8.

Esto Series

The Esto series consists of well-drained soils that formed in beds of clayey materials. These are undulating soils on uplands. Some short breaks occur. Slopes range from 2 to 8 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand about 7 inches thick. The subsoil is sandy clay and clay that extends to a depth of 66 inches. It is strong brown and red mottled with shades of red and yellow in the upper part and yellowish brown mottled with shades of red, gray, and yellow in the lower part.

Esto soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth in uneroded areas, but only fair tilth in eroded spots. The root zone is mainly deep. Permeability is slow, and the available water capacity is medium.

Esto soils are not widely distributed throughout the two counties. They are not important to farming. Only a small acreage is cultivated. Corn is the chief crop. The natural vegetation is mainly mixed pine and hardwood forest. Most of the acreage is used for pines, to which the soils are suited. A small acreage is used for pasture, to which the soils are fairly well suited.

Representative profile of Esto loamy sand, 2 to 8 percent slopes, in an area of Esto complex, 2 to 8 percent slopes, 0.2 mile northwest of Zion Grove Church along county road; 2.2 miles south along county road; 0.4 mile west along county road; 400 yards south in pasture; Colquitt County:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable;

many fine roots; very strongly acid; abrupt, smooth boundary.

B21t—7 to 14 inches, strong-brown (7.5YR 5/8) sandy clay; few, fine, distinct mottles of yellowish red and red; moderate, medium, angular blocky structure; firm; clay films on some ped surfaces; common fine roots; very strongly acid; clear, wavy boundary.

B22t—14 to 30 inches, red (2.5YR 4/8) sandy clay; common, coarse, prominent mottles of brownish yellow (10YR 6/6); moderate, medium, angular blocky structure; firm; clay films on some ped surfaces; very strongly acid; gradual, wavy boundary.

B23t—30 to 54 inches, yellowish-brown (10YR 5/8) sandy clay; common, medium, prominent mottles of red (2.5YR 4/8) and light gray (10YR 7/1); moderate, medium, angular blocky structure; firm; clay films on many ped surfaces; very strongly acid; clear, wavy boundary.

B24t—54 to 66 inches, mottled red (2.5YR 4/8), light-gray (N 7/0), and brownish-yellow (10YR 6/6) clay; strong, medium, angular blocky structure; very firm; clay films on ped surfaces; very strongly acid.

The Ap or A1 horizon ranges from 3 to 8 inches in thickness and from grayish brown to dark grayish brown in color. The Bt horizon is sandy clay or clay. To a depth of about 30 inches, it is strong brown to red and has mottles in shades of brown, yellow, and red.

Esto soils are among Carnegie, Cowarts, and Sunsweet soils. They have a more clayey subsoil than Carnegie and Cowarts soils. They do not have the iron concretions and plinthite that are characteristic of Carnegie and Sunsweet soils.

Esto complex, 2 to 8 percent slopes (EfC).—This mapping unit is about 60 percent Esto soils and 40 percent soils similar, but somewhat wetter. It is mainly on short slopes and small knobs. Areas are only a few acres in size. Because these soils were so intricately intermingled, it was not practical to map them separately.

The Esto soil in this complex has a profile similar to the one described as representative of the series, but the surface layer varies in texture within short distances. It ranges from loamy sand to sandy loam.

Included with these soils in mapping are small areas of Cowarts and Fuquay soils.

These Esto soils are well suited to pines and are fairly well suited to pasture. They generally are not suited to cultivated crops. The erosion hazard is severe, and the subsoil is clayey. Most of the acreage is pine forest. A small acreage is pastured. Capability unit VIe-2; woodland group 3o1.

Fuquay Series

The Fuquay series consists of well-drained, nearly level to very gently sloping soils that formed in beds of loamy materials on uplands. Slopes are 1 to 4 percent.

In a representative profile the surface layer is grayish-brown loamy sand about 6 inches thick. Below this is an 18-inch layer of light olive-brown loamy sand. In sequence downward, the subsoil is 8 inches of friable, yellowish-brown sandy loam; 10 inches of yellowish-brown sandy clay loam mottled with yellowish red; 18 inches of mottled light yellowish-brown sandy clay loam; and 12 inches of gray sandy clay mottled with shades of yellow and red. Plinthite is below a depth of about 32 inches.

Fuquay soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a deep root zone. Permeability is rapid in the sandy upper part of the profile and slow in the clayey lower part. The available water capacity is low to medium.

Fuquay soils are distributed throughout Colquitt and Cook Counties, and the acreage is significant. The natural vegetation is mixed hardwood and pine forest and an understory of wiregrass and native grasses. The soils are generally well suited to most locally grown crops and to some special crops (fig. 6). Crops respond well to management. A significant acreage is used for cultivated crops and for pasture, to which the soils are also well suited. A considerable acreage is also used for pines, to which the soils are suited.

Representative profile of Fuquay loamy sand, 1 to 4 percent slopes, 4 miles southeast of Springhead Church; 2.25 miles northwest of Greggs; Cook County:

Ap—0 to 6 inches, grayish-brown (10YR 5/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid; gradual, wavy boundary.

A2—6 to 24 inches, light olive-brown (2.5Y 5/4) loamy sand; weak, fine, granular structure; very friable; very strongly acid; gradual, wavy boundary.

B1t—24 to 32 inches, yellowish-brown (10YR 5/8) sandy loam; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B21t—32 to 42 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct mottles of yellowish red (5YR 5/6); moderate, medium, subangular blocky structure; few clay films on ped surfaces; few small iron concretions; 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B22t—42 to 60 inches, light yellowish-brown (2.5Y 6/4) sandy clay loam; common, fine, prominent mottles of yellowish brown, light gray, and red; moderate, medium, subangular blocky structure; friable; few clay films on ped surfaces; 12 percent plinthite; very strongly acid; gradual, wavy boundary.

B23tg—60 to 72 inches, gray (10YR 6/1) sandy clay; many medium and coarse mottles of brownish yellow (10YR 6/8, red (10YR 4/8), and weak red (10YR 5/4); moderate, medium, subangular blocky structure; firm; 15 percent plinthite; very strongly acid.

The Ap or A1 horizon ranges from dark grayish-brown or grayish-brown to dark-gray loamy sand. The A horizon ranges from 21 to 38 inches in thickness. Small rounded quartz pebbles and iron concretions are on the surface and throughout the solum in places. The B21t and B22t horizons range from yellowish-brown to light yellowish-brown sandy clay loam to sandy loam. Fine, prominent, gray mottles begin at a depth of 40 inches or more. The B23tg horizon is gray, brownish yellow, or yellowish brown and has many to common mottles in shades of yellow, gray, and red in some places. The depth to plinthite is 32 to 56 inches. Plinthite makes up 5 to 15 percent of some horizons. Coarse sand grains are prominent in some places.

Some of the Fuquay soils in Colquitt and Cook Counties are shallower over plinthite than is defined as the range for the Fuquay series. The behavior and response to management, however, are so similar that naming another soil is not warranted.

Fuquay soils commonly are associated with Cowarts, Dothan, Kershaw, and Stilson soils. They have a much thicker A horizon than Cowarts and Dothan soils. They have a more clayey B horizon than Kershaw soils, which do not contain plinthite. They are better drained than Stilson soils and do not have the gray mottles that are typical of those soils.

Fuquay loamy sand, 1 to 4 percent slopes (FsB).—This well-drained sandy soil commonly is on uplands. Areas are as much as 50 acres in size.

Included with this soil in mapping are small areas of

Figure 6.—Cabbage on Fuquay loamy sand, 1 to 4 percent slopes. Supplemental water is applied as needed.

Dothan and Kershaw soils. Also included are some areas where the upper 40 inches of the soil is about 5 to 15 percent pebbles.

This soil responds well to management, including adequate lime and heavy fertilization, but the thick, sandy surface layer makes it slightly droughty (fig. 7). The soil is extensively cultivated and is well suited to most crops grown in the counties, including corn, peanuts, tobacco, and rye. A moderate acreage is used for pasture and for pine trees, to which it also is suited.

Erosion is not a hazard. The main management need is to return frequent and large amounts of plant residue to the soil to improve fertility and water-holding capacity. An example of a suitable cropping system is peanuts or a crop that produces a similar amount of residue. Only the crop should be harvested and all crop residue and aftermath left on the surface between crop seasons. Capability unit IIs-1; woodland group 3s2.

Grady Series

The Grady series consists of very poorly drained, very dark gray and gray soils that formed in beds of clay. These soils are in depressions. Slopes are less than 1 percent.

In a representative profile the surface layer is very dark gray fine sandy loam about 6 inches thick. Beneath this is grayish-brown fine sandy loam about 3 inches thick. The subsoil to a depth of 60 inches or more is gray, firm clay mottled with yellowish brown and strong brown.

Grady soils are low in natural fertility, are low to moderate in supply of organic matter, and are very strongly acid throughout. They have fairly good tilth and a moderately deep root zone if drained. Permeability is slow to very slow, and the available water capacity is medium.

Grady soils are in small scattered areas throughout the two counties. The total acreage is small. The natural vegetation is cypress, blackgum, and tupelo gum and an understory of gallberry, myrtle, and sedges. Nearly all the acreage is wooded. Cypress is the dominant species. Water stands on this soil for several months each year. Drainage is essential in areas used for pasture.

Representative profile of Grady sandy loam in an area of Grady soils, on county road; 0.75 mile due west of No Mans Friend Pond; 1 mile south of River Bend Courthouse; Cook County:

A1—0 to 6 inches, very dark gray (N 3/0) fine sandy loam; weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary.

A2g—6 to 9 inches, grayish-brown (2.5Y 5/2) fine sandy loam;

Figure 7.—**Evidence of insufficient moisture in Fuqual loamy sand. Corn grows well on this soil if moisture is adequate.**

few, fine, faint mottles of light gray (N 7/0); weak, fine, granular structure; very friable; very strongly acid; clear, smooth boundary.

B21tg—9 to 38 inches, gray (N 5/0) clay; common, medium, distinct mottles of yellowish brown (10YR 5/8); moderate, medium, angular blocky structure; firm; very strongly acid; gradual, smooth boundary.

B22tg—38 to 60 inches, gray (N 5/0) clay; common, medium, distinct mottles of strong brown (7.5YR 5/8) and yellowish brown (10YR 5/8); moderate, medium, angular blocky structure; firm; very strongly acid.

The A1 horizon ranges from very dark gray to black or grayish brown and is 3 to 6 inches thick. It is fine sandy loam, sandy loam, loam, and sandy clay loam. The B21tg horizon ranges from gray to light-gray clay to sandy clay. In areas that are ponded for long periods, the soils have a layer of black muck about 3 to 4 inches thick on the surface.

Grady soils are mainly among Tifton, Robertsdale, Irvington, and Alapaha soils. They are more poorly drained and have a more clayey B horizon than those soils. They are in saucer-shaped depressions, whereas Alapaha soils are in shallow depressions and flats along the upper parts of drainageways.

Grady soils (Grd).—These are very poorly drained soils in depressions that are mainly 3 to 10 acres in size. Slopes are less than 1 percent. Even if drained, these soils generally are too wet for cultivation. They have the profile described as representative of the series, but the surface layer ranges from sandy loam to sandy clay loam.

Included with these soils in mapping are small areas of Alapaha and Irvington soils.

During wet seasons these soils are flooded more than once each year for 1 to 6 months. The seasonal high water table is within a depth of 15 inches for more than 6 months each year. These soils require drainage if they are used for pasture or pines. If the surface water is removed, they are well suited to pine forest. Nearly all the acreage is wooded, mostly with cypress and blackgum, both of which are well suited. Capability unit Vw-1; woodland group 2w9.

Irvington Series

The Irvington series consists of moderately well drained soils that have a fragipan. These soils formed in thick beds of loamy marine deposits on smooth uplands. Slopes are 0 to 3 percent.

In a representative profile the surface layer is grayish-brown loamy sand about 8 inches thick. The upper 16 inches of the subsoil is olive-yellow sandy loam and yellowish-brown sandy clay loam. The lower 36 inches or more is a fragipan. It is yellowish-brown and strong-brown, firm

sandy clay loam that has mottles of red, strong brown, yellowish brown, and light gray. Small, rounded iron concretions are on the surface and throughout the profile. Plinthite is below a depth of about 24 inches.

Irvington soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a moderately deep root zone. Permeability is slow, and the available water capacity is medium. The fragipan is weakly expressed, but permeability in the pan is slow enough to cause a perched water table.

Irvington soils are in moderately small areas throughout Colquitt and Cook Counties. The total acreage is small. The natural vegetation is mixed pine and hardwood forest and an understory of gallberry and wiregrass. Many areas are used for corn, soybeans, tobacco, and truck crops, to which the soils are suited. Some drainage is needed for successful cultivation during most years. The soils are well suited to pasture and pines. Most of the acreage is in pines.

Representative profile of Irvington loamy sand, 2.5 miles northeast of Sparks; 0.75 mile east of paved county road; Cook County:

Ap—0 to 8 inches, grayish-brown (2.5Y 5/2) loamy sand; weak, fine, granular structure; very friable; few iron nodules; many fine roots; very strongly acid; abrupt, smooth boundary.

B1—8 to 13 inches, olive-yellow (2.5Y 6/6) sandy loam; weak, fine, granular structure; very friable; few iron nodules; common fine roots; very strongly acid; clear, smooth boundary.

B2cn—13 to 24 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, fine, faint mottles of strong brown; moderate, medium, subangular blocky structure; friable; common iron nodules; common roots; very strongly acid; clear, smooth boundary.

Bx1—24 to 40 inches, yellowish-brown (10YR 5/8) sandy clay loam; many, coarse, prominent mottles of light gray (2.5Y 7/2) and red (2.5YR 4/8) and common, medium, distinct mottles of strong brown (7.5YR 5/8); moderate, medium, subangular blocky structure; firm, brittle; common fine pores; uncoated sand grains in gray mottles; 10 percent plinthite; 5 percent iron nodules; common roots; very strongly acid; gradual, smooth boundary.

Bx2—40 to 60 inches, mottled strong-brown (7.5YR 5/8), red (10R 4/8), light-gray (2.5Y 7/2), and yellowish-brown (10YR 5/8) sandy clay loam; mottles are medium; moderate, medium, subangular blocky structure; firm, slightly brittle; common fine pores; uncoated sand grains in gray mottles; 7 percent iron nodules; 15 percent plinthite; few roots; very strongly acid.

The Ap horizon is loamy sand that ranges from 6 to 13 inches in thickness. The A1 horizon, where present, is very dark gray. Iron nodules are few to common in the A horizon and the upper part of the B horizon. Depth to the fragipan and to plinthite is 24 to 27 inches. Depth to gray mottles ranges from 24 to 42 inches.

Irvington soils are mainly among Stilson, Leefield, Grady, and Alapaha soils. They are better drained and are in higher positions on the landscape than Alapaha and Grady soils. They have a fragipan, which Stilson and Leefield soils do not have. They are better drained than Leefield soils.

Irvington loamy sand (Ij).—This moderately well drained soil is on uplands, generally in fairly large areas adjacent to, but slightly higher than, pond areas and drainageways. A number of 8- to 10-acre areas also occur. This soil has a fragipan. It also has a seasonal high water table at a depth of 20 to 30 inches for 1 to 2 months each year. Slopes are 0 to 3 percent.

Included with this soil in mapping are small areas of Leefield, Robertsdale, and Stilson soils.

This soil responds well to lime and fertilizer. A moderate acreage is cultivated. Corn, tobacco, peanuts, and soybeans are the main crops and grow well under heavy applications of fertilizer. A moderate acreage is used for pasture, to which the soil is well suited. Most of the acreage is in slash pine and longleaf pine, to which the soil is also well suited.

Excess water is the main limitation. To insure maximum efficiency, some drainage, either open ditches or covered tile drains, is needed in cultivated areas. Water management depends on the crop to be grown.

If drainage is adequate and enough plant residue is returned to keep the soil in good tilth, suitable crops can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIw-2; woodland group 2o7.

Kershaw Series

The Kershaw series consists of excessively drained soils that formed in thick beds of sand on uplands. Slopes range from 0 to 5 percent.

In a representative profile the surface layer is very dark gray sand about 4 inches thick. Below this is 4 inches of grayish-brown sand. The underlying material to a depth of 72 inches is sand. In sequence downward, 6 inches of this is light yellowish brown, 10 inches is light olive brown mottled with light gray, and 48 is light yellowish brown mottled with strong brown in the lower 28 inches.

Kershaw soils are low in natural fertility, contain little organic matter, and are strongly acid. Tilth is fair to good, and the root zone is deep. Crops show fair to poor response to fertilization unless water is supplied. Permeability is very rapid, and the available water capacity is very low.

Kershaw soils are widely distributed throughout the two counties. They are commonly adjacent to and on the east side of major streams. Some sharp breaks are adjacent to the larger streams. The total acreage is small. The natural vegetation (fig. 8) is chiefly turkey oak; blackjack oak; a few, scattered longleaf pines; and a scant understory of wiregrass and common weeds. A few areas are cultivated, but the soils are not suited to cultivated crops because the available water capacity is very low. Nearly all the acreage is wooded. A considerable acreage has been planted to slash pine.

Representative profile of Kershaw sand, 0 to 5 percent slopes, 0.5 mile southeast of concrete bridge over Georgia Highway 37 at Cook-Colquitt County line on private road; 50 feet south of road; Cook County:

A1—0 to 4 inches, very dark gray (10YR 3/1) sand; single grained; loose; many grass roots; strongly acid; clear, smooth boundary.

A2—4 to 8 inches, grayish-brown (2.5Y 5/2) sand; single grained; loose; many grass roots; strongly acid; clear, smooth boundary.

C1—8 to 14 inches, light yellowish-brown (2.5Y 6/4) sand; single grained; loose; clean sand grains; strongly acid; gradual, wavy boundary.

C2—14 to 24 inches, light olive-brown (2.5Y 5/4) sand;

Figure 8.—**Live oak, blackjack oak, palmetto, and a few scattered longleaf pine on Kershaw sand, 0 to 5 percent slopes.**

splotches of light gray; single grained; loose; strongly acid; gradual, wavy boundary.

C3—24 to 44 inches, light yellowish-brown (2.5Y 6/4) sand; single grained; loose; strongly acid; gradual, wavy boundary.

C4—44 to 72 inches, light yellowish-brown (2.5Y 6/4) sand; few, fine mottles of strong brown; single grained; loose; strongly acid.

The A1 horizon ranges from dark grayish brown and very dark gray to very dark grayish brown. Depth to sand is more than 72 inches. Sand grains are uncoated. Mottling or splotching with clean sand grains is fairly common at lower depths.

In a few places the Kershaw soils in Colquitt and Cook Counties have a reddish C horizon, which is outside the range defined for the Kershaw series. This difference, however, does not affect the use or behavior of the soils.

Kershaw soils are among Fuquay, Albany, Cowarts, and Alapaha soils. They are coarser textured throughout and are much more excessively drained than Fuquay and Cowarts soils. They are coarser textured in the lower horizons, are in higher positions on the landscape, and are much better drained than Albany and Alapaha soils.

Kershaw sand, 0 to 5 percent slopes (KdB).—This excessively drained, sandy soil is on uplands, commonly in fairly large, narrow areas. It is sand to a depth of more than 72 inches.

Included with this soil in mapping are small areas of Fuquay and Albany soils.

This Kershaw soil is not well suited to cultivated crops and is only fairly well suited to pasture because it is droughty. Only a small acreage is cultivated or pastured. The natural vegetation is mainly oak and a few scattered pines. Many areas have been planted to slash pine (fig. 9), which does fairly well on this soil. Capability unit VIIs–1; woodland group 5s3.

Leefield Series

The Leefield series consists of somewhat poorly drained soils that formed in thick beds of loamy material on low uplands. Slopes are 0 to 3 percent.

In a representative profile the surface layer is very dark gray loamy sand about 6 inches thick. Below this, to a depth of 31 inches, is mainly brownish-yellow loamy sand mottled with light gray and light yellowish brown. The subsoil to a depth of 65 inches is sandy clay loam. To a depth of 55 inches, it is yellowish brown mottled with light gray and red. Below this, it is mottled with light gray, brownish yellow, and red. Plinthite is below a depth of about 31 inches.

Figure 9.—**Slash pine transplanted 7 years ago on Kershaw sand, 0 to 5 percent slopes.**

Leefield soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a deep root zone. They respond well to management, including heavy fertilization. Permeability is moderately slow, and the available water capacity is low to medium.

Leefield soils are widely distributed throughout Colquitt and Cook Counties. The total acreage is fairly large. The natural vegetation is mixed pine and hardwood forest and an understory of gallberry, deertongue, and wiregrass. A number of areas are cultivated and are planted to corn, tobacco, and truck crops, to which the soils are well suited. Some drainage is generally needed in cultivated areas. These soils are also suited to pines and are well suited to pasture.

Representative profile of Leefield loamy sand, 0.25 mile west of U.S. Highway 41; 100 yards west of railroad on private road; 50 feet into wooded area on north side of road; 1.25 miles south of fire tower; Cook County:

A1—0 to 6 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, smooth boundary.

A21—6 to 11 inches, light brownish-gray (2.5Y 6/2 loamy sand; weak, fine, granular structure; very friable; few fine roots; very strongly acid; clear, smooth boundary.

A22—11 to 26 inches, brownish-yellow (10YR 6/6) loamy sand; common, medium, distinct mottles of light yellowish brown (2.5Y 6/4) and light gray (2.5Y 7/2); weak, fine, granular structure; very friable; many fine pores; very strongly acid; gradual, smooth boundary.

AB—26 to 31 inches, brownish-yellow (10YR 6/6) sandy loam; common, medium, distinct mottles of light gray (2.5Y 7/2) and yellowish red (5YR 5/8); weak, medium, subangular blocky structure; very friable; very strongly acid; clear, smooth boundary.

B21t—31 to 55 inches, yellowish-brown (10YR 5/8) sandy clay loam; common medium, distinct mottles of light gray (10YR 7/1) and red (2.5YR 4/8); moderate, medium, subangular blocky structure; some peds that have yellowish-red centers are firm; sand grains coated and bridged with clay; few soft and slightly hard iron concretions; 5 to 10 percent plinthite; very strongly acid; gradual, smooth boundary.

B22t—55 to 65 inches, coarsely mottled light-gray (10YR 7/1), brownish-yellow (10YR 6/6), and red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; firm; clay films on some ped surfaces; 5 to 10 percent soft plinthite; very strongly acid.

The A horizon ranges from 20 to 38 inches in thickness. The A1 horizon ranges from very dark gray to very dark grayish

brown. The B21t horizon is mainly sandy clay loam, but is sandy loam in some places. Depth to plinthite is typically 30 to 40 inches, but in places it is as much as 54 inches.

Leefield soils are near Irvington, Alapaha, and Stilson soils. In contrast with Irvington soils, they are in lower positions on the landscape, have a thicker A horizon, and are not so well drained. They are not so well drained, but are otherwise similar to Stilson soils. They are in higher positions and are better drained than Alapaha soils.

Leefield loamy sand (Ls).—This somewhat poorly drained soil is on low uplands, commonly in long, narrow areas and on flats adjacent to ponds and drainageways. Slopes are 0 to 3 percent. The water table is at a depth of 15 to 30 inches for 2 to 4 months each year.

Included with this soil in mapping are small areas of Irvington, Stilson, and Alapaha soils.

This Leefield soil is suited to trees (fig. 10) and is well suited to pasture. Most of the acreage is wooded. A moderate acreage is cultivated. Tobacco, corn, and truck crops are the main crops. The response to heavy fertilization is good. Some drainage is generally needed in cultivated areas.

Excess water is the main concern if cultivated crops are grown. The amount of drainage needed depends on the crop. The soil can be drained through open ditches or covered tile drains.

If drainage is adequate and enough plant residue is returned to keep the soil in good tilth, suitable crops can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIw-2; woodland group 3w2.

Mascotte Series

The Mascotte series consists of poorly drained, nearly level soils that formed mainly in thick beds of sandy and loamy marine material on broad, flat areas. Slopes range from 0 to 2 percent, but are mainly less than 1 percent.

In a representative profile the surface layer is dark-gray sand about 8 inches thick. Below this is a 4-inch layer of leached light-gray sand. In sequence downward, the subsoil is 12 inches of very dark grayish-brown sand that in most places is weakly cemented with organic matter, 12 inches of light-gray sand mottled with pale yellow, 24 inches of gray sandy clay loam mottled with brownish yel-

Figure 10.—Slash pines cupped for production of naval stores. A 10-inch minimum diameter is desirable in trees to be cupped. The soil is Leefield loamy sand.

low, and 12 inches of light-gray sandy loam mottled with yellowish brown.

Mascotte soils are low in natural fertility, contain little organic matter except in the organically cemented layer in the upper part of the subsoil, and are very strongly acid throughout. The organically cemented layer sometimes impedes water movement, and free water is held above it for short periods. Roots are somewhat restricted. The depth to which roots can grow is determined largely by depth to the seasonal high water table during the growing season. Tilth is fair to good. Permeability is moderate and the available water capacity is low.

Only a few areas of Mascotte soils are used for cultivated crops and pasture. The natural vegetation is chiefly longleaf pine, slash pine, palmetto, gallberry, waxmyrtle, and runner oak.

Representative profile of Mascotte sand, 1.1 mile north of Laconte on U.S. Highway 41; 100 yards east of road in an area of planted pines; Cook County:

A1—0 to 8 inches, dark-gray (10YR 4/1) sand; single grained; loose; many fine roots; very strongly acid; gradual, wavy boundary.

A2—8 to 12 inches, light-gray (10YR 7/1) sand; single grained; loose; very strongly acid; abrupt, wavy boundary.

B2h—12 to 24 inches, very dark grayish-brown (10YR 3/2) sand; common, fine, faint mottles of dark brown (7.5YR 3/2); weak, fine, granular structure; very friable; weakly cemented; very strongly acid; clear, wavy boundary.

A'2—24 to 36 inches, light-gray (10YR 7/2) sand; few, fine, faint mottles of pale yellow (2.5Y 7/4); single grained; very friable; yellowish-red stains in fine root channels; very strongly acid; gradual, wavy boundary.

B'21tg—36 to 60 inches, gray (10YR 6/1) sandy clay loam; many, medium, distinct mottles of brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B'22tg—60 to 72 inches, light-gray (10YR 7/1) sandy loam; common, medium, distinct mottles of yellowish brown (10YR 5/8); weak, medium, subangular blocky structure; friable; very strongly acid.

The A1 horizon ranges from black to dark gray. The A horizon is 10 to 12 inches thick. The B2h horizon is 4 to 14 inches. thick. Depth to the Bt horizon is 36 to 40 inches. The B'21tg horizon is commonly sandy clay loam but ranges to sandy clay in some areas.

Mascotte soils are associated with Alapaha, Bayboro, and Olustee soils. They have a Bh horizon that does not occur in Alapaha and Bayboro soils. They are less wet and are less clayey in the B horizon than Bayboro soils. They have a leached A2 horizon above the Bh horizon that does not occur in Olustee soils.

Mascotte sand (Mn).—This poorly drained, level or nearly level soil is in the "flatlands" of Cook County.

Included with this soil in mapping are small areas of Olustee, Leefield, and Alapaha soils.

The water table is at a depth of 15 to 30 inches for 2 to 6 months each year. During periods of heavy rain, it remains at the surface for weeks at a time. None of the acreage is cultivated in these two counties, and where cultivation is attempted, crop failure generally follows. Pasture plants, such as bahiagrass, can be grown, but surface drainage is needed. Most of the acreage is used for pine forest. Deertongue, or vanillaleaf, a native plant that is economically important to a few people, grows well on this soil. Capability unit Vw-4; woodland group 3w2.

Ocilla Series

The Ocilla series consists of somewhat poorly drained soils that formed in thick beds of loamy material. Areas are broad. Slopes are 0 to 3 percent.

In a representative profile the surface layer is very dark gray and dark-gray loamy sand about 12 inches thick. Beneath this is about 12 inches of light yellowish-brown loamy sand mottled with yellowish brown and light brownish gray. The subsoil extends to a depth of 66 inches or more. The upper 18 inches is light yellowish-brown sandy loam and sandy clay loam mottled with light gray, yellowish brown, and olive yellow. The lower 24 inches is yellowish-brown sandy clay loam mottled with light yellowish brown, yellowish red, and light gray.

Ocilla soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and can be cultivated throughout a wide range of moisture conditions. They have a deep root zone. Permeability is moderate, and available water capacity is low to medium.

Ocilla soils are not extensive in the two counties. The natural vegetation is mixed pine and hardwood forest and an understory of gallberry, myrtle, and wiregrass. A large acreage on the higher parts of the landscape is used for crops and pasture. Only a small acreage on river and creek terraces is cultivated because flooding is frequent. Drainage is needed in cultivated areas because the water table is seasonally high. More than 50 percent of the acreage is wooded. Slash pine and longleaf pine are dominant.

Representative profile of Ocilla loamy sand, 0.9 mile south of Pine Grove Church along county road; 1.9 miles west along county road; 20 feet west of road in wooded area; Colquitt County:

A11—0 to 5 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; very friable; many medium and fine roots; very strongly acid; abrupt, smooth boundary.

A12—5 to 12 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, granular structure; very friable; common medium and fine roots; very strongly acid; clear, wavy boundary.

A2—12 to 24 inches, light yellowish-brown (2.5Y 6/4) loamy sand; few, fine, faint mottles of yellowish brown and light brownish gray; weak, fine, granular structure; very friable; few medium roots in upper part; clear medium sand grains; very strongly acid; gradual, wavy boundary.

B1t—24 to 30 inches, light yellowish-brown (2.5Y 6/4) sandy loam; common, medium, distinct mottles of light gray (2.5Y 7/2) and olive yellow (2.5Y 6/8); moderate, fine, granular structure; very friable; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B21t—30 to 42 inches, light yellowish-brown (2.5Y 6/4) sandy clay loam; common, medium, distinct mottles of yellowish brown (10YR 5/8) and light gray (10YR 7/1); weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B22t—42 to 54 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct mottles of light yellowish brown (2.5Y 6/4) and light gray (10YR 7/1); weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B23t—54 to 66 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, distinct mottles of light yellowish brown (2.5Y 6/4), light gray (10YR 7/1), and yellowish red (5YR 4/8); weak, medium, subangular blocky structure; friable; very strongly acid.

The A horizon is loamy sand and loamy fine sand. Areas under cultivation have a grayish-brown, dark grayish-brown, or dark-

gray Ap horizon. The depth to the B1t horizon ranges from 21 to 30 inches.

Ocilla soils are commonly among Stilson, Rains, Alapaha, Chipley, and Dunbar soils. They are not so well drained as Stilson soils and do not have the soft plinthite in the lower part of the B horizon that is characteristic of those soils. They are in higher positions on the landscape and are better drained than Rains and Alapaha soils. They are not so well drained as Chipley soils and are more clayey in the B horizon than those soils. They have similar drainage, but are less clayey in the B horizon than Dunbar soils.

Ocilla loamy fine sand, frequently flooded (On).—This somewhat poorly drained soil is on stream terraces. It has a profile similar to the one described as representative of the series, but the surface layer contains more fine sand and the substratum slightly less clay. The seasonal high water table is at a depth of 15 to 30 inches for 2 to 4 months each year. Slopes are 0 to 2 percent.

Included with this soil in mapping are small areas of Chipley and Dunbar soils.

This soil is subject to frequent flooding for more than 2 days. Only a small acreage is cultivated. Corn is the main crop. The soil is fairly well suited to pasture, but only a small acreage is pastured because overflow is a hazard. Most of the acreage is used for slash pine and longleaf pine, to which the soil is suited.

The seasonal high water table and overflow hazard are the main limitations. Some drainage is needed in cultivated areas. Water management depends on the crop. A system of open ditches or covered tile drains should be designed and installed.

If drainage is adequate and enough plant residue is returned to keep the soil in good tilth, any suitable crop can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer. Capability unit IVw-3; woodland group 3w2.

Ocilla loamy sand (Oh).—This somewhat poorly drained soil is on uplands. It is generally on broad flats adjacent to ponds and drainageways. Areas are moderately large, some as much as 30 acres in size. Slopes are 0 to 3 percent. This soil has the profile described as representative of the series. In places it contains a few iron concretions.

Included with this soil in mapping are small areas of Leefield and Stilson soils.

This soil has a fluctuating water table, which causes it to be wet during rainy seasons and slightly droughty during dry seasons. The seasonal high water table is at a depth of 15 to 30 inches for 2 to about 4 months each year. If adequately drained, this soil is well suited to such locally grown crops as corn, tobacco, and soybeans and is especially well suited to tobacco. It is also suited to permanent pasture. Most of the acreage is in pines, to which the soil is suited. A considerable acreage is cultivated.

Excess water is the main concern. In places some drainage is needed to insure maximum suitability for crops. Water management depends on the crop. A system of open ditches or tile drains can be designed and installed.

If drainage is adequate and enough plant residue is returned to keep the soil in good tilth, row crops can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIIw-1; woodland group 3w2.

Olustee Series

The Olustee series consists of poorly drained soils that formed in thick beds of sandy and loamy marine material on low uplands. Slopes range from 0 to 2 percent, but are mainly less than 1 percent.

In a representative profile the surface layer is dark-gray sand about 7 inches thick. The upper 7 inches of the subsoil is very dark grayish-brown, weakly cemented sand, and the next 5 inches is dark-brown sand. The middle 16 inches is light brownish-gray sand mottled with shades of brown and gray. The lower 25 inches is gray sandy clay loam mottled with yellowish brown and strong brown.

Olustee soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a deep root zone. Permeability is moderate, and the available water capacity is low.

The natural vegetation (fig. 11) is mixed pine and hardwood forest and an understory of palmetto, gallberry, waxmyrtle, and wiregrass. Most of the acreage is used for slash pine and longleaf pine, to which the soils are suited. Some areas have been cleared, drained, and heavily fertilized and used for corn and tobacco. A moderately small acreage is used for pasture.

Representative profile of Olustee sand, 1 mile northeast of Cook-Lowndes County line on private road; 1 mile northwest of Cecil Interchange on Interstate 75, Cook County:

Ap—0 to 7 inches, dark-gray (N 4/0) sand; single grained; loose; many fine roots; very strongly acid; abrupt, smooth boundary.

Bh—7 to 14 inches, very dark grayish-brown (10YR 3/2) and dark-brown (7.5YR 3/2) sand; massive; friable; weakly cemented; many fine roots; very strongly acid; clear, smooth boundary.

B3&Bh—14 to 19 inches, dark-brown (10YR 3/3) sand; few, fine, faint mottles of grayish brown; single grained; loose; few fine roots; very strongly acid; gradual, wavy boundary.

A'2—10 to 35 inches, light brownish-gray (2.5Y 6/2) sand; few, fine, faint mottles of light yellowish brown and light gray; single grained; loose; few fine roots; very strongly acid; gradual, wavy boundary.

B'2tg—35 to 60 inches, gray (10YR 6/1) sandy clay loam; common, medium, distinct mottles of yellowish brown (10YR 5/6) and few, fine, distinct mottles of strong brown; moderate, medium, subangular blocky structure; friable; few clay films on ped surfaces and in pores; sand grains bridged with clay; very strongly acid.

The Ap and A1 horizons range from dark gray to very dark gray or black and are 5 to 7 inches thick. The matrix of the Bh horizon ranges from very dark grayish brown to very dark brown. The B'2tg horizon is at a depth of 32 to 36 inches.

Olustee soils are assoicated with Mascotte and Alapaha soils. They do not have the leached A2 horizon above the Bh horizon that is characteristic of Mascotte soils. They have a Bh horizon below the A horizon, which does not occur in Alapaha soils.

Olustee sand (Oa).—This poorly drained soil is commonly on the slightly higher elevations of broad flats. Slopes are 0 to 2 percent.

Figure 11.—**Natural vegetation on Olustee sand. The understory is predominantly palmetto, gallberry, and fern.**

Included with this soil in mapping are small areas of Leefield and Mascotte soils.

The seasonal high water table in this Olustee soil fluctuates, but it is less than 15 inches from the surface for 1 to 2 months each year. Only a small acreage is cultivated. Some drainage is needed most years in cultivated areas. Corn and tobacco are the main crops. This soil responds well to fertilizer. Part of the acreage is used for pasture. A large acreage is in pines, to which the soil is suited. Deertongue, or vanillaleaf, a plant that is economically important to a few people, grows well on this soil. It is gathered by hand and sold to tobacco companies.

Excess water is the main concern. Some drainage is needed to insure maximum suitability for crops. Water management depends on the crop. Excess water can be removed through a system of open ditches or tile drains.

If drainage is adequate and enough plant residue is returned to keep the soil productive, any suitable crop, such as corn, can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIIw-1; woodland group 3w2.

Orangeburg Series

The Orangeburg series consists of well-drained soils that formed in beds of loamy material. These soils are on uplands. Slopes are 3 to 6 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand about 8 inches thick. The subsoil, which reaches to a depth of 72 inches, is mainly red, friable sandy clay loam.

Orangeburg soils are low in natural fertility, contain little organic matter, and are strongly acid to very strongly acid throughout. They have good tilth and a deep root zone. Crops respond well to fertilization. Permeability is moderate, and the available water capacity is medium.

All the acreage of Orangeburg soils is in Colquitt County. The natural vegetation is chiefly mixed pine and hardwood forest and an understory of native grasses. These soils respond well to management, including heavy fertilization, and they are well suited to most locally grown crops. Most of the acreage is used for crops and pasture. These soils are considered among the best soils for farming. A moderate acreage is used for pines, to which the soils are well suited.

Representative profile of Orangeburg loamy sand, 3 to

6 percent slopes, 0.8 mile west of Bay Freewill Church along Georgia Highway 37; 3.6 miles west along hard-surfaced road; 50 feet south of road in cultivated field; Colquitt County:

Ap—0 to 8 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

B1t—8 to 14 inches, yellowish-red (5YR 4/8) sandy loam; weak, fine, granular structure; very friable; few fine roots; very strongly acid; clear, wavy boundary.

B21t—14 to 56 inches, red (2.5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B22t—56 to 72 inches, red (2.5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable; very strongly acid.

The Ap horizon ranges from dark grayish brown to brown and is yellowish red in severely eroded areas. The Ap and A1 horizons range from 4 to 10 inches in thickness. The upper 3 to 5 inches of the B1t horizon is sandy loam. The B2t horizon is sandy clay loam that ranges from yellowish red to red. It is mottled with yellowish brown or brownish yellow at a depth of more than 40 inches in places.

Orangeburg soils are among Tifton, Dothan, and Fuquay soils. They do not have the many iron concretions that are characteristic of Tifton soils and have a redder B horizon than those soils. They are similar to Dothan soils in texture, but their B horizon is redder and does not contain plinthite. They do not have a thick, sandy A horizon or a B horizon that contains plinthite, both of which are characteristic of Fuquay soils.

Orangeburg loamy sand, 3 to 6 percent slopes (OeB).—This well-drained soil is on uplands. It is generally on the tops and sides of ridges in moderately small areas.

Included with this soil in mapping are small areas of Tifton, Dothan, and Fuquay soils.

This Orangeburg soil responds well to management and is considered among the best soils in the two counties for farming. It is well suited to most locally grown crops. It is also well suited to pasture and pines.

In cultivated areas the farmer generally has a choice of four erosion control practices. He can cultivate in straight rows across the slope, on the contour without terraces, or on the contour with terraces, or stripcrop. The method used depends on the crops grown and the extent of the limitations.

Management that maintains productivity and good tilth and holds soil losses from erosion within allowable limits is needed. It consists of regular applications of lime and fertilizer according to plant needs; good management of crop residue, generally by shredding and leaving it on the surface between crop seasons; and use of a suitable cropping system. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practices. An example of a suitable cropping system on a terraced slope of 4 percent is 1 year of small grain followed by 1 year of corn. All crop residue and aftermath are left on the surface between crop seasons.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences located on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IIe-1; woodland group 2o1.

Osier Series

The Osier series consists of poorly drained to very poorly drained, nearly level soils in low wet areas along the first bottoms of rivers, creeks, and branches. These soils are subject to flooding and accumulation of sediments. Slopes are less than 1 percent.

In a representative profile the surface layer is dark-gray fine sandy loam about 3 inches thick. This overwash layer in many places is stratified with lenses of sand. Below the surface layer and extending to a depth of about 62 inches, or more, is stratified sandy material. It is mainly mottled gray sand in the upper part, mottled light brownish-gray coarse sand in the middle part, and dark grayish-brown sand mottled with light olive gray in the lower part.

Osier soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have poor tilth. The depth of the root zone is determined largely by the depth to the seasonal high water table during the growing season. Permeability is rapid, and the available water capacity is low.

Osier soils occur throughout Colquitt and Cook Counties. The natural vegetation is chiefly sweetgum, blackgum, water oak, red maple, swamp holly, bay, and a few slash pines. These soils are not suited to cultivation because they are frequently flooded. Most of the acreage is used for trees, to which the soils are suited.

Osier soils in Colquitt and Cook Counties are mapped with Pelham soils.

Representative profile of Osier fine sandy loam in an area of Osier and Pelham soils, 1 mile southwest of Crosland, Georgia, along U.S. Highway 319; 200 feet south of road in wooded area; Colquitt County:

A1—0 to 3 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; very friable; roots matted; very strongly acid; abrupt, wavy boundary.

C1g—3 to 8 inches, light brownish-gray (2.5Y 6/2) sand; few, fine, faint mottles of light gray and few, fine, distinct mottles of olive yellow; stratified sand lenses; single grained; loose; common large and small roots; very strongly acid; clear, wavy boundary.

C2g—8 to 36 inches, gray (10YR 5/1) sand; few, fine, distinct mottles of yellowish brown; single grained; loose; few medium roots; very strongly acid; gradual, wavy boundary.

C3g—36 to 50 inches, light brownish-gray (10YR 6/2) coarse sand; common, medium, faint mottles of light gray and few, fine, distinct mottles of black and yellowish brown; single grained; loose; very strongly acid; gradual, wavy boundary.

C4g—50 to 62 inches, dark grayish-brown (10YR 4/2) sand; common, medium, distinct mottles of light olive gray (5Y 6/2); single grained; loose; very strongly acid.

The A1 horizon ranges from 2 to 6 inches in thickness. It is sand, loamy sand, and fine sandy loam. The C horizon is stratified coarse sand to loamy sand. The C2g and C3g horizons are mainly gray and light brownish gray and have a few light-gray, black, and yellowish-brown mottles.

Osier soils are among Pelham soils. They have similar drainage, but are coarser textured than Pelham soils between depths of 10 and 40 inches and, typically, in the lower part of the C horizon.

Osier and Pelham soils (OP).—This mapping unit is about 42 percent Osier soil and 23 percent Pelham soil. It is on bottom lands along the rivers, creeks, and branches in Colquitt and Cook Counties. It is subject to frequent flooding for periods of 2 days to 2 weeks. The seasonal high water table is within a depth of 15 inches for 3 to 6

months each year. Slopes are less than 1 percent. Areas range from 200 to 3,000 acres in size. Some areas are Osier soils, some are Pelham soils, and some contain both soils.

Osier soils are poorly drained to very poorly drained. They have a profile similar to the one described as representative of the Osier series, but in many places the surface layer is stratified with lenses of sand and in places it is loamy sand. Pelham soils are poorly drained. They have a profile similar to the one described as representative of the Pelham series, but in places the surface layer is loamy sand or sand.

Included with these soils in mapping are areas of soils that are similar to Pelham soils, but are sandy to a depth of more than 40 inches. Also included are similar soils that have a thick, black surface layer.

These soils are suited to trees. They are not used for cultivated crops because they are wet and subject to overflow. Most of the acreage is wooded, mainly with hardwoods. A small acreage is pastured. Capability unit Vw-2; woodland group 3w3.

Pelham Series

The Pelham series consists of poorly drained, nearly level soils on low flats or in slightly depressed areas and along flood plains of streams. Slopes are mainly less than 1 percent.

In a representative profile the surface layer is very dark gray loamy sand about 6 inches thick. Beneath this is a 22-inch layer of dark-gray loamy sand. The subsoil extends to a depth of 62 inches or more. To a depth of about 46 inches, it is gray sandy clay loam mottled with light yellowish brown and gray. Below this, it is yellowish-brown sandy clay loam mottled with light gray, yellowish red, and red.

These soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have fair tilth. The depth of the root zone is determined largely by the depth to the seasonal high water table during the growing season. Permeability is moderate, and the available water capacity is low to medium. Water stands at or near the surface for significant periods.

Pelham soils are widely distributed throughout Colquitt and Cook Counties. Almost all the acreage is wooded, mainly because it is subject to frequent overflow. The native vegetation is chiefly slash pine, blackgum, sweetgum, cypress, and water oak and an understory of gallberry, waxmyrtle, palmetto, and pitcherplant.

The Pelham soils in Colquitt and Cook Counties are mapped only with Osier soils.

Representative profile of Pelham loamy sand in an area of Osier and Pelham soils, 0.2 mile west of Pleasant Grove Church along Georgia Highway 37; 0.8 mile north along paved county road; 100 feet southwest of road junction in wooded area; Colquitt County:

A1—0 to 6 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid; clear, wavy boundary.

A2—6 to 28 inches, dark-gray (10YR 4/1) loamy sand; common, medium, faint mottles of gray (10YR 5/1); weak, fine, granular structure; very friable; common medium roots; very strongly acid; clear, wavy boundary.

B21tg—28 to 38 inches, gray (10YR 6/1) sandy clay loam; few, medium, faint mottles of gray (10YR 5/1); moderate, medium, subangular blocky structure, friable; few medium roots; very strongly acid; gradual, wavy boundary.

B22tg—38 to 46 inches, gray (10YR 6/1) sandy clay loam; common, medium, distinct mottles of light yellowish brown (2.5Y 6/4); weak, medium, subangular blocky structure; friable; few sand lenses; very strongly acid; gradual, wavy boundary.

IIB23t—46 to 62 inches, yellowish-brown (10YR 5/8) sandy clay loam; many, medium, prominent mottles of yellowish red (5YR 4/6) and light gray (10YR 7/1) and few, medium, distinct mottles of red (2.5YR 4/8); moderate, medium, subangular blocky structure; friable; very strongly acid.

The A horizon ranges from loamy sand to sand. The A1 horizon typically ranges from very dark gray to gray. The A1 and A2 horizons combined range from 21 to 34 inches in thickness. The B22tg horizon is sandy clay loam that has pockets of sand.

Pelham soils are associated with Alapaha, Osier, and Ocilla soils. They closely resemble Alapaha soils, but have less than 5 percent plinthite in the B horizon to a depth of 60 inches. They are in lower positions on the landscape and are more poorly drained than Ocilla soils. They have a Bt horizon at a depth of 21 to 34 inches, which Osier soils do not have.

Rains Series

The Rains series consists of poorly drained soils that formed in old loamy alluvium, mainly on stream terraces. Slopes range from 0 to 2 percent, but are mainly less than 1 percent.

In a representative profile the surface layer is gray fine sandy loam about 6 inches thick. Below this is about 6 inches of gray fine sandy loam mottled with brownish yellow. The subsoil extends to a depth of 66 inches or more. To a depth of 42 inches, it is gray, friable sandy clay loam mottled with brownish yellow, strong brown, and light yellowish brown. Below this it is light brownish-gray sandy clay loam mottled with light yellowish brown and strong brown.

Rains soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth. Permeability is moderate, and the available water capacity is medium. The depth of the root zone is determined largely by the depth of the seasonal high water table during the growing season.

Rains soils are limited in extent and are in moderate to small areas on stream terraces along rivers and their main tributaries. The natural vegetation is mixed hardwood and pine forest and an understory of gallberry and waxmyrtle. These soils are not cultivated because they are subject to overflow several times yearly and are poorly drained. Most of the acreage is wooded. The trees well suited are blackgum, water oak, sweetgum, slash pine, cypress, and similar species. A few areas are in pasture, but drainage is needed for best results.

Representative profile of Rains fine sandy loam, 0.4 mile north on paved road from Emmanuel Church; 0.3 mile west along paved road at pipeline crossing; 60 feet north of road in wooded area; Colquitt County:

A1—0 to 6 inches, gray (N 6/0) fine sandy loam; few, fine, faint mottles of olive yellow and light gray; weak, fine, granular structure; very friable; many fine and medium roots; very strongly acid; abrupt, smooth boundary.

A2—6 to 12 inches, gray (10YR 6/1) fine sandy loam; common, medium, distinct mottles of brownish yellow (10YR

6/6) ; weak, fine, granular structure; very friable; common fine and medium roots; very strongly acid; clear, wavy boundary.

B21tg—12 to 20 inches, gray (10YR 6/1) sandy clay loam; many, fine, distinct mottles of brownish yellow and light yellowish brown; moderate, medium, subangular blocky structure; friable; few medium roots; very strongly acid; gradual, wavy boundary.

B22tg—20 to 30 inches, gray (10YR 6/1) sandy clay loam; common, coarse, distinct mottles of brownish yellow (10YR 6/6) ; moderate, medium, subangular blocky structure; friable; few clay films on ped surfaces; few medium roots; very strongly acid; gradual, wavy boundary.

B23tg—30 to 36 inches, gray (10YR 6/1) sandy clay loam and lenses of sand; common, medium, distinct mottles of brownish yellow (10YR 6/6) ; weak, medium, subangular blocky structure; friable; very strongly acid; gradual, wavy boundary.

B24tg—36 to 42 inches, gray (10YR 6/1) sandy clay loam; common, coarse, distinct mottles of strong brown (7.5YR 5/8) and brownish yellow (10YR 6/6) ; moderate, medium, subangular blocky structure; friable; few clay films on ped surfaces; very strongly acid; wavy boundary.

B25tg—42 to 66 inches, light brownish-gray (10YR 6/2) sandy clay loam; common, medium, faint mottles of light yellowish brown (10YR 6/4) and common, medium, distinct mottles of strong brown (7.5YR 5/8) ; moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; very strongly acid.

The A horizon ranges from gray to very dark gray and black. The depth to the Bt horizon ranges from 10 to 14 inches. The Bt horizon is mainly gray and has mottles that range from light yellowish brown to strong brown and a few mottles of yellowish red. In places the B2t horizon has sand lenses or pockets of sandy loam. It ranges from sandy clay loam to sandy loam that is 18 to 20 percent clay and less than 20 percent silt. It ranges from weak to moderate subangular blocky in structure.

Rains soils are among Chipley, Ocilla, and Dunbar soils. They are more poorly drained than those soils. They are finer textured throughout than Chipley soils. They are in lower positions on the stream terraces and are wetter than Ocilla soils. They have a less clayey B horizon than Dunbar soils.

Rains fine sandy loam (Ros).—This poorly drained soil is commonly along stream terraces. Areas are moderate to small. The seasonal high water table is within a depth of 15 inches for more than 6 months each year. During wet seasons this soil is flooded more than once each year for periods of about 2 to 7 days. Slopes are 0 to about 2 percent.

Included with this soil in mapping are small areas of Chipley, Ocilla, and Dunbar soils.

Nearly all the acreage is woodland, to which the soil is well suited. A small acreage is in pasture, and good results can be obtained if drainage and fertilization are adequate. Bahiagrass is suitable. In addition to being subject to overflow, this soil is wet. For these reasons, none of the acreage is cultivated. Capability unit Vw-5; woodland group 2w3.

Robertsdale Series

The Robertsdale series consists of somewhat poorly drained soils that have a fragipan. These soils formed in thick beds of loamy material. They are on uplands. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is very dark gray loamy sand about 8 inches thick. Beneath this is about 5 inches of pale-brown loamy sand. The subsoil to a depth of 64 inches is sandy clay loam. The upper 7 inches is pale brown mottled with yellowish brown and light gray. The lower part is a fragipan. It is firm and is light gray mottled with yellowish brown and red to a depth of 42 inches. Below this, it is dominantly firm and is yellowish brown mottled with shades of gray, red, and brown. Typically, a few, small, hard iron pebbles are on the surface and throughout the upper part of the profile. Iron pebbles are common in the fragipan. Plinthite is below a depth of about 20 inches.

Robertsdale soils are low in natural fertility, contain little organic matter, and are strongly acid to very strongly acid throughout. They have good tilth and a mainly moderately deep root zone. Permeability is moderately slow, and the available water capacity is medium.

Robertsdale soils are widely distributed throughout the two counties, but the acreage is small. The natural vegetation is slash pine, longleaf pine, oak, and other hardwoods and an understory of gallberry and wiregrass. Small areas are cultivated and are planted to corn, soybeans, tobacco, peanuts, and truck crops, to which the soils are suited. Some drainage is needed for cultivated crops during most years. The soils also are well suited to pasture and pines. Most of the acreage is used for pines.

Representative profile of Robertsdale loamy sand, 0.2 mile south of Autreyville Church along Georgia Highway 133; 1.1 miles southeast along paved road; 45 feet south of road in unimproved pasture; Colquitt County.

Ap—0 to 8 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; very friable; many fine roots; few iron concretions; strongly acid; abrupt, smooth boundary.

A2—8 to 13 inches, pale-brown (10YR 6/3) loamy sand; few, fine, faint mottles of brownish yellow; weak, fine, granular structure; very friable; common fine roots; few iron concretions; very strongly acid; clear, wavy boundary.

B1tcn—13 to 20 inches, pale-brown (10YR 6/3) sandy clay loam; few, fine, faint and distinct mottles of very pale brown, yellowish brown, and light gray; weak, medium, granular structure; very friable; few fine roots in upper part; common iron concretions; very strongly acid; clear, wavy boundary.

Bx1—20 to 42 inches, light-gray (10YR 7/2) sandy clay loam; common, medium, distinct mottles of yellowish brown (10YR 5/8) and few, medium, prominent mottles of red (10YR 4/8) ; weak, coarse, subangular blocky structure; firm, brittle; common hard iron concretions; few clay films on some ped surfaces; 20 percent plinthite; very strongly acid; gradual, wavy boundary.

Bx2—42 to 48 inches, yellowish-brown (10YR 5/8) sandy clay loam; many, medium, distinct and prominent mottles of light gray (10YR 7/1) and red (2.5YR 4/8) ; weak, coarse, subangular blocky structure; firm, brittle; common, fine, vesicular pores lined with clay; few hard iron concretions; clay films on many ped surfaces; 15 percent plinthite; very strongly acid; gradual, wavy boundary.

Bx3—48 to 64 inches, distinctly mottled yellowish-brown (10YR 5/8), red (10R 4/8), light-gray (10YR 7/1), and strong-brown (7.5YR 5/8) sandy clay loam; weak, coarse, subangular blocky structure; firm, brittle; many vesicular pores lined with clay; few hard iron concretions; clay films on many ped surfaces; 10 percent plinthite; very strongly acid.

The Ap and A1 horizons range from very dark gray to dark gray. The number of iron concretions ranges from few to common on the surface and in the upper part of the profile. The content of pebbles is typically highest in the upper part of the fragipan; it decreases with increasing depth. Depth to the fragipan ranges from 20 to 34 inches. The Bx horizon is light gray or yellowish brown mottled with shades of gray, red, and brown.

Nearly 50 percent of the Robertsdale soils in Colquitt and

Cook Counties are slightly less than 18 percent clay in the B1tcn horizon, which is outside the defined range for the series. This difference does not alter the usefulness and behavior of the soils.

Robertsdale soils are commonly among Tifton, Irvington, Grady, and Alapaha soils. They are not nearly so well drained as Tifton soils, and they are in lower positions on the landscape. They are similar to Irvington soils, but are not so well drained. They are in higher positions and are better drained than Grady and Alapaha soils.

Robertsdale loamy sand (Rl).—This somewhat poorly drained soil has a fragipan. It generally is on uplands adjacent to, but slightly higher than, ponded areas or drainageways. Areas are small and typically narrow and long. The seasonal high water table is at a depth of about 15 to 30 inches for 2 to 4 months each year.

Included with this soil in mapping are small areas of Irvington and Alapaha soils.

This Robertsdale soil responds well to lime and fertilizer, and a moderate acreage is cultivated. Corn, tobacco, peanuts, and soybeans are the main crops. Drainage is needed during most years. A moderate acreage is in pasture, to which the soil is well suited. A large acreage is in slash pine and longleaf pine, to which the soil also is well suited.

Excess water is the main concern. Some drainage is needed to insure maximum suitability for crops. Water management depends on the crop. A system of open ditches or covered tile drains should be designed and installed.

If drainage is needed and enough plant residue is returned to keep the soil in good tilth, any adapted crop can be grown year after year. A planned sequence of crops helps control weeds, insect, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIIw-2; woodland group 2w8.

Stilson Series

The Stilson series consists of moderately well drained soils that formed in thick beds of loamy material. These soils are on uplands. Slopes are 0 to 3 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand about 8 inches thick. Below this is about 16 inches of light yellowish-brown loamy sand. The subsoil to a depth of about 48 inches is mainly light yellowish-brown sandy clay loam mottled with yellowish brown, red, and light gray. Below this, to a depth of 66 inches, it is brownish-yellow sandy clay loam mottled with red and light gray. Red and gray mottles and plinthite are below a depth of about 30 inches.

Stilson soils are low to moderate in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth and a mainly deep root zone and respond well to fertilization. Permeability is moderate, and available water capacity is low to medium.

Stilson soils are widely distributed throughout the two counties, but the total acreage is moderately small. The natural vegetation is mixed pine and hardwood forest and an understory of gallberry and wiregrass. A large acreage is used for corn, soybeans, tobacco, and truck crops, to which the soils are well suited. Some drainage is needed for successful cultivation during most years. A large part of the acreage is in pines and pasture, to which the soils also are suited.

Representative profile of Stilson loamy sand, 0.3 mile east of New Hope Cemetery along paved road; 60 feet north of road in cultivated field; Colquitt County:

Ap—0 to 8 inches, dark grayish-brown (2.5Y 4/2) loamy sand; weak, fine, granular structure; very friable; many fine roots; very strongly acid; abrupt, smooth boundary.

A2—8 to 24 inches, light yellowish-brown (2.5Y 6/4) loamy sand; few, fine, faint mottles of olive yellow; weak, fine, granular structure; very friable; few fine roots; very strongly acid; clear, wavy boundary.

B1t—24 to 30 inches, light yellowish-brown (2.5Y 6/4) sandy loam; common, medium, distinct mottles of strong brown (7.5YR 5/8) and pale yellow 5Y 7/3); weak, fine, granular structure; very friable; very strongly acid; gradual, wavy boundary.

B21t—30 to 36 inches, light yellowish-brown (2.5Y 6/4) sandy clay loam; common, medium, distinct mottles of red (2.5YR 4/8), yellowish brown (10YR 5/8), and light gray (2.5Y 7/2); moderate, medium, subangular blocky structure; friable; few, small, hard iron concretions; 5 percent plinthite; very strongly acid; gradual, wavy boundary.

B22t—36 to 48 inches, light yellowish-brown (2.5Y 6/4) sandy clay loam; common, medium, distinct mottles of light gray (10YR 7/1) and strong brown (7.5YR 5/8); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; 5 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—48 to 66 inches, brownish-yellow (10YR 6/6) sandy clay loam; many, coarse, prominent mottles of red (2.5YR 4/8) and light gray (10YR 7/1); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; 10 percent plinthite; very strongly acid.

The A horizon ranges from 20 to 28 inches in thickness. The Ap horizon is typically loamy sand, but in places is loamy fine sand. The A1 and Ap horizons range from dark gray to dark grayish brown. The Bt horizon is commonly sandy clay loam, but in a few areas it is sandy loam that is 18 to 20 percent clay. Plinthite makes up 5 to 15 percent of the B2t horizon. In places a few iron concretions are throughout the profile.

Stilson soils are among Dothan, Leefield, and Alapaha soils. They are in higher positions on the landscape and are better drained than Leefield soils. They are much better drained and are in higher positions than Alapaha soils. They have a thicker, sandier A horizon than Dothan soils, but are not so well drained.

Stilson loamy sand (Se).—This moderately well drained soil is on uplands. It commonly is in moderately small areas adjacent to but higher than drainageways. Slopes are mainly 0 to 3 percent. A profile of this soil is described as representative of the series. A seasonal high water table is at a depth of about 30 to 36 inches for 1 to 2 months each year.

Included with this soil in mapping are small areas of Dothan, Leefield, and Fuquay soils.

Most of the acreage of this Stilson soil is in pines and pasture, to which it is suited. A considerable acreage is cultivated. Corn, tobacco, peanuts, and soybeans are the main crops. Truck crops are also grown. Crops respond well to management, including adequate drainage and heavy fertilization.

Excess water is the main concern in cultivated areas. In places some drainage is needed to insure maximum efficiency for crops. Water management depends on the crop. A system of open ditches or covered tile drains can be designed and installed.

If drainage is adequate and enough plant residue is returned to keep the soil in good tilth, any suitable crop

can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and makes more efficient use of fertilizer. Fertility can be maintained by regularly applying lime and fertilizer according to plant needs. Capability unit IIw–2; woodland group 3s2.

Stilson-Urban land complex (Suc).—This mapping unit is 40 to 50 percent Stilson soil and 20 to 40 percent Urban land. Percentages vary somewhat from area to area, but the Stilson soil is dominant. Mapped areas are in the more heavily populated and industrial parts of the two counties. The original landscape has been altered in many places by cutting, filling, and shaping.

During wet seasons, the seasonal high water table in the Stilson soil is at a depth of about 30 to 36 inches for 1 or 2 months. Soils in the Urban land part of this mapping unit cannot be identified because they are covered with industrial buildings, houses, paved streets, sidewalks, parking lots, driveways, airports, and other structures.

Included with these soils in mapping are small areas of Kershaw, Leefield, Alapaha, and Pelham soils.

Land use has been well established and is likely to remain much the same in future years. Alternative use of the soil not covered by structures is severely limited. Capability unit IIw–2; not assigned to a woodland group.

Sunsweet Series

The Sunsweet series consists of well-drained soils that formed in clayey, marine sediments on uplands. Slopes range from 5 to 12 percent.

In a representative profile the surface layer is dark-brown sandy loam about 4 inches thick. The subsoil to a depth of about 66 inches is mainly sandy clay. It is yellowish red mottled with shades of red, yellow, and gray in the upper part; yellowish brown and pale yellow coarsely mottled with shades of red, brown, and white in the middle part; and dusky red coarsely mottled with shades of gray, yellow, and brown in the lower part. Plinthite is at a depth of about 9 inches.

Sunsweet soils are low in natural fertility, contain little organic matter, and are very strongly acid throughout. They have good tilth, except in eroded spots. The effective root zone for most plants is shallow. Permeability is moderately slow, and the available water capacity is medium.

The acreage is small. The natural vegetation is mixed pine and hardwood forest and an understory of wiregrass. These soils generally are not cultivated. A small part of the acreage is used for pasture, but most of it is used for pines, to which the soils are suited.

Representative profile of Sunsweet sandy loam, 5 to 12 percent slopes, eroded, 3.5 miles west of Pineview Church along paved road; 50 feet north of road in pasture; Colquitt County:

Apcn—0 to 4 inches, dark-brown (7.5YR 3/2) sandy loam; weak, fine, granular structure; very friable; 15 percent hard iron concretions, 1/8 to 1 inch in diameter; many fine roots; very strongly acid; abrupt, smooth boundary.

B21tcn—4 to 9 inches, yellowish-red (5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable; 10 percent hard iron concretions; common fine roots; very strongly acid; clear, smooth boundary.

B22t—9 to 26 inches, yellowish-red (5YR 5/6) sandy clay; common, medium, distinct mottles of dark red (7.5YR 3/6) and brownish yellow (10YR 6/6) and few, fine, prominent mottles of light gray (10YR 7/1); moderate, medium, angular blocky structure; firm; continuous clay films on ped surfaces; few hard iron concretions; 5 to 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B23t—26 to 40 inches, yellowish-brown (10YR 5/8) sandy clay; many, coarse, prominent mottles of red (7.5R 5/6), light yellowish brown (2.5Y 6/4), white (10YR 8/1), and dusky red (7.5R 3/4); moderate, medium, angular blocky structure; firm; clay films on many ped surfaces; 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—40 to 56 inches, pale-yellow (2.5Y 7/4) sandy clay; many, coarse, prominent mottles of white (10YR 8/1), strong brown (7.5YR 5/6), and dark red (7.5R 3/6); moderate, medium, angular blocky structure; firm; clay films on many ped surfaces; about 10 percent plinthite; very strongly acid; gradual, wavy boundary.

B25t—56 to 66 inches, dusky-red (7.5R 3/4) sandy clay; many, coarse, prominent mottles of light gray (10YR 7/1), brownish yellow (10YR 6/8), and strong brown (7.5YR 5/6); moderate, medium, angular blocky structure; firm; clay films on many ped surfaces; 10 percent plinthite; very strongly acid.

The Apcn and A1 horizons range from dark brown, dark grayish brown, or brown to dark reddish gray. The A horizon and the upper part of the B horizon have few to many iron concretions. The B21tcn horizon is mainly sandy clay, but is sandy clay loam in places. The depth to mottling ranges from 8 to 12 inches. The depth to light-gray or white mottles ranges from 9 to 38 inches. These mottles do not indicate wetness. The B22t horizon ranges from yellowish brown to red, but is most commonly yellowish red.

Sunsweet soils are commonly associated with Carnegie, Tifton, and Esto soils. They closely resemble Carnegie soils in color, but are shallower over plinthite and have a more clayey B horizon. They are shallower over plinthite and have a more clayey B horizon than Tifton soils. They have more iron concretions in the A horizon and the upper part of the Bt horizon than Esto soils. They also have more coarse mottling in the lower part of the B horizon than the non-plinthic Esto soils.

Sunsweet sandy loam, 5 to 12 percent slopes, eroded (ShD2).—This well-drained soil is on rolling landscapes. Slopes are short. Areas are small in size. In places the subsoil is exposed at the surface, and shallow gullies and rills are common.

Included with this soil in mapping are small areas of Carnegie, Tifton, and Esto soils.

This Sunsweet soil is not generally suited to cultivation, and only a moderate acreage is used for pasture. Steepness, abrupt breaks, and the erosion hazard are the main limitations. Most of the acreage is in pines, to which the soil is suited. Capability unit VIe–2; woodland group 3c2.

Tifton Series

The Tifton series consists of well-drained, nearly level to gently sloping soils that formed in thick beds of reticulately mottled loamy material. These soils are on uplands. Slopes range from 0 to 8 percent.

In a representative profile the surface layer is dark grayish-brown loamy sand 10 inches thick. The subsoil to a depth of 66 inches is sandy clay loam. It is yellowish brown in the upper part; yellowish brown mottled with shades of brown, yellow, red, and gray in the middle part; and red mottled with shades of brown, yellow, and gray in the lower part. Rounded iron concretions 1/8 to 1/2 inch in

diameter are on the surface and throughout most of the profile. Plinthite is below a depth of about 42 inches.

Tifton soils are low to moderate in natural fertility, contain little organic matter, and are strongly acid to very strongly acid throughout. They have good tilth and a deep root zone and respond well to management, including fertilization. Permeability is moderate, and available water capacity is medium.

Tifton soils are extensive throughout Colquitt and Cook Counties. The natural vegetation is chiefly mixed pine and hardwood forest and an understory of native grasses, mainly wiregrass. These soils are well suited to most locally grown crops and are considered among the best soils for farming. Most of the acreage is in cultivated crops and pasture.

Representative profile of Tifton loamy sand, 2 to 5 percent slopes, 1.6 miles north of Bay Church, on county road; 0.5 mile east along county road; and 0.6 mile southeast along county road; on south side of road in a cultivated field; Colquitt County:

Apcn—0 to 10 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; many, small, hard iron concretions 1/8 to 1/2 inch in diameter; many fine roots; strongly acid; abrupt, smooth boundary.

B21tcn—10 to 32 inches, yellowish-brown (10YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; many iron concretions; common fine roots in upper part; very strongly acid; clear, wavy boundary.

B22t—32 to 42 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, prominent mottles of red (2.5YR 4/8) and yellow (10YR 7/6); moderate, medium, subangular blocky structure; friable; few soft and hard iron concretions; very strongly acid; gradual, wavy boundary.

B23t—42 to 50 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, medium, prominent mottles of red (10R 4/8), common, medium, faint mottles of strong brown (7.5YR 5/8), and few, medium, distinct mottles of light gray (10YR 7/2); moderate, medium, subangular blocky structure; friable; clay films on some ped surfaces; few soft iron concretions; 25 percent plinthite; very strongly acid; gradual, wavy boundary.

B24t—50 to 66 inches, red (10R 4/8) sandy clay loam; many, coarse, prominent mottles of yellowish brown (10YR 5/8), light gray (10YR 7/1), and brownish yellow (10YR 6/6); moderate, medium, subangular blocky structure; firm; clay films on some ped surfaces; about 28 percent plinthite; very strongly acid.

The A horizon ranges from 5 to 14 inches in thickness, from loamy sand to sandy loam in texture, and from grayish brown to very dark grayish brown in color. The B2t horizon is mainly yellowish brown. The B23t and B24t horizons are mainly sandy clay loam, but in some places range to sandy clay. The B24t horizon ranges from yellowish brown to red and has coarse, prominent mottles of yellowish brown, light gray, and brownish yellow. Iron concretions on the surface and throughout the solum range from few to many. The depth to plinthite ranges from 25 to 48 inches, but is typically more than 34 inches.

Tifton soils commonly are near Dothan, Carnegie, Sunsweet, and Irvington soils. They closely resemble Dothan soils, but have many more iron concretions throughout most of the solum and generally have slightly more clay in the B horizon. They have thicker horizons free of plinthite than Carnegie soils. They do not have the fragipan that is characteristic of Irvington soils, and they are better drained than those soils. They have a less clayey B horizon and thicker horizons free of plinthite than Sunsweet soils.

Tifton loamy sand, 0 to 2 percent slopes (TqA).—This well-drained soil is on uplands. It is commonly on ridgetops. Areas are large; some are as much as 50 acres in size.

Included with this soil in mapping are areas of Dothan and Fuquay soils.

This Tifton soil responds well to management and is considered among the best soils in the counties for farming. It is well suited to most locally grown crops and is used extensively for cotton, corn, peanuts (fig. 12), tobacco, truck crops, and soybeans. It also is well suited to pasture and pines.

If enough plant residue is returned to the soil to maintain good tilth, suitable crops can be grown year after year. A planned sequence of crops helps control weeds, insects, and disease and permits more efficient use of fertilizer. Lime and fertilizer should be applied regularly according to plant needs. Capability unit I–2; woodland group 2o1.

Tifton loamy sand, 2 to 5 percent slopes (TqB).—This soil makes up the largest acreage of any of the Tifton soils, and nearly all of it is cultivated. Areas are as much as 80 or 90 acres in size. The profile of this soil is described as representative of the series.

Included with this soil in mapping are small areas of Dothan, Fuquay, and Cowarts soils.

This Tifton soil can be cultivated throughout a wide range of moisture content. It is extensively used and is well suited to most locally grown crops. It responds well to management, including heavy fertilization. It also is well suited to pasture and pines.

Erosion is a moderate hazard. In cultivated areas the farmer generally has a choice of four erosion control practices. He can stripcrop (fig. 13) or cultivate in straight rows across the slope, on the contour without terraces, or on the contour with terraces. The method used depends on the crops grown and the extent of the limitations.

The management needed maintains soil productivity and good tilth and holds soil losses from erosion within allowable limits. Such measures are regular applications of lime and fertilizer according to plant needs; good management of crop residue, generally by shredding and leaving it on the surface between crop seasons; and use of a suitable cropping system. The minimum cropping system is determined by the steepness and length of slopes or by the erosion control practice. An example of a suitable cropping system on a terraced slope of 3 percent is "skip-row" cotton, that is, 2 rows of cotton and 1 row fallow, for 1 year, followed by small grain for 1 year.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IIe–2; woodland group 2o1.

Tifton sandy loam, 2 to 5 percent slopes, eroded (TuB2).—This soil generally is in areas no more than 10 acres in size. It has a profile similar to the one described as representative of the series, but the surface layer is 3 to 4 inches thinner and contains slightly more clay. In many places the subsoil is exposed at the surface, and a few shallow gullies have formed. In places the plow layer is entirely in the original surface layer.

Figure 12.—**Peanuts on Tifton loamy sand, 0 to 2 percent slopes. This soil is used extensively for this crop.**

Included with this soil in mapping are small areas of Carnegie and Sunsweet soils.

The erosion hazard is severe. The soil is suited to most crops commonly grown in the survey area, including cotton, corn, peanuts, and oats. It also is well suited to pasture (fig. 14) and pines. In cultivated areas, the farmer generally has a choice of four erosion control practices. He can stripcrop or cultivate in straight rows across the slope, on the contour without terraces, or on the contour with terraces. The method used depends on the crops grown and the extent of the limitations.

Generally, row crops can be grown for 1 year, but for no more than 2 successive years. The minimum cropping system needed to hold soil loss from erosion within allowable limits is determined by the steepness and length of slope and the erosion control practice. An example of a suitable cropping system on a terraced slope of 4 percent is small grain for 1 year followed by corn for 1 year. Lime and fertilizer should be applied regularly.

Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field border of perennial grass prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. Capability unit IIe-2; woodland group 2o1.

Tifton sandy loam, 5 to 8 percent slopes, eroded (TuC2).—This well-drained soil is in a narrow band between ridgetops and drainageways. It has a profile similar to the one described as representative of the series, but the surface layer is 4 to 5 inches thinner and differs in texture. Erosion has removed part of the original surface layer, and the present plow layer extends into the upper part of the subsoil. In some patches the plow layer consists wholly of the original surface layer, and in others the subsoil is exposed at the surface. A few rills and shallow gullies have formed in most areas.

Included with this soil in mapping are small areas of Carnegie, Sunsweet, and Cowarts soils.

This Tifton soil has good tilth, except in eroded spots. It is suited to most locally grown crops, but runoff is rapid and the erosion hazard is severe in cultivated areas. Water enters this soil more slowly than in the uneroded Tifton soils. Some of the acreage is cultivated. Most of it, however, has been planted to improved pasture and pines, to which the soil is well suited.

This soil can be cultivated on the contour without terraces or on the contour with terraces, or in strips, depend-

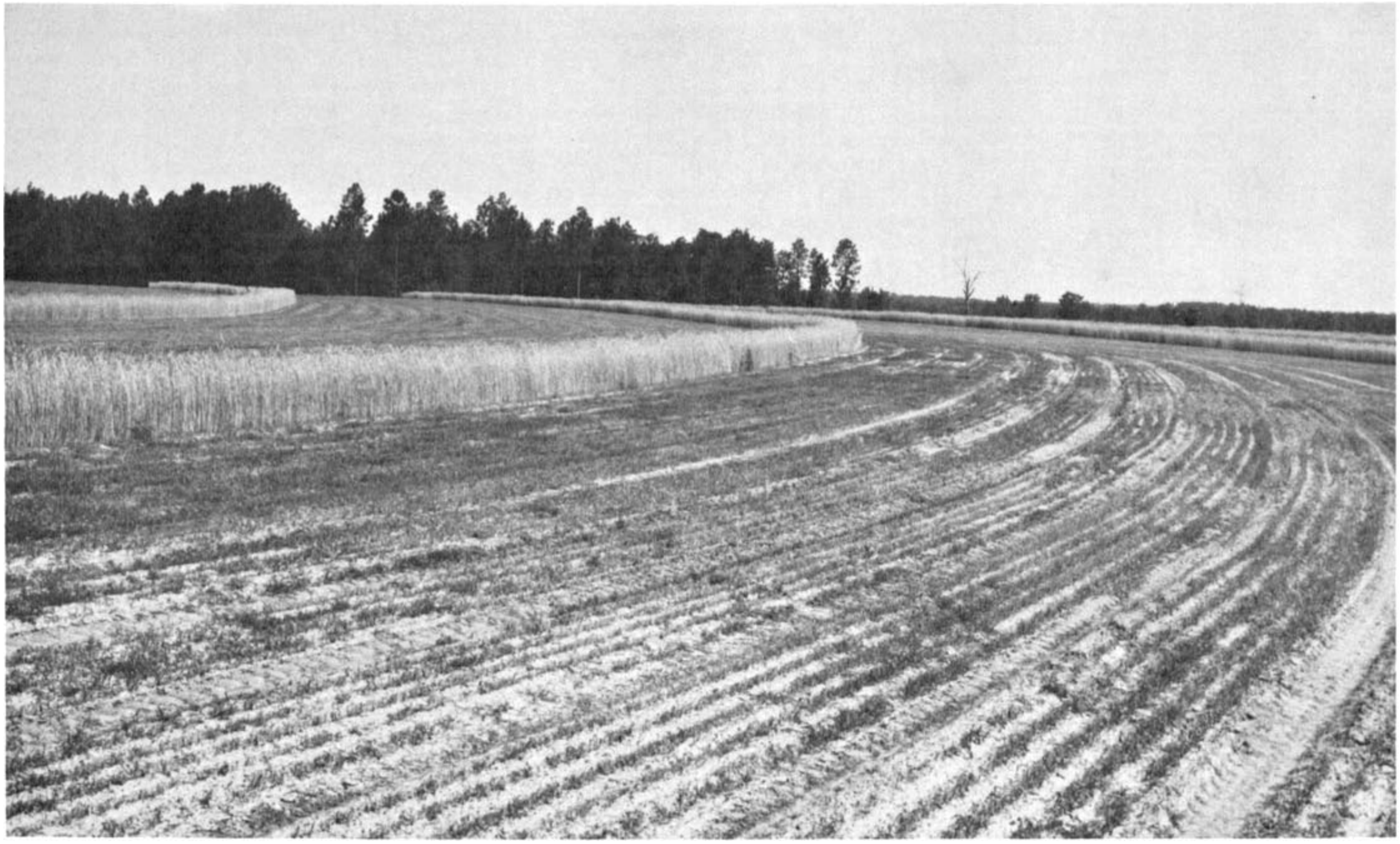

Figure 13.—**Strips of rye on the contour between rows of tomato plants on Tifton loamy sand, 2 to 5 percent slopes. These strips protect the plants from sand cutting during strong winds in March and April.**

ing on the crops grown and the degree of the limitation.

The management needed maintains productivity and good tilth and holds soil loss from erosion within allowable limits. Such measures are regular applications of lime and fertilizer according to plant needs; good management of crop residue, generally by shredding and leaving it on the surface between crop seasons; and use of a suitable cropping system. The minimum cropping system needed is determined by the steepness and length of slopes or by the erosion control practice. An example of a suitable cropping system on a terraced slope of 6 percent is lister planted corn grown each year for grain. Capability unit IIIe-2; woodland group 2ol.

Tifton-Urban land complex, 2 to 8 percent slopes (TnC).—This mapping unit is 40 to 50 percent Tifton soils and 20 to 40 percent Urban land. The percentages vary from area to area, but Tifton soils are dominant. Mapped areas are confined to heavily populated and industrial areas. The original landscape has been altered by cutting, filling, and shaping.

In undisturbed areas the Tifton soil has a profile similar to the one described as representative of the series. The surface layer is dark grayish-brown loamy sand about 8 inches thick, and the subsoil is yellowish-brown to yellowish-red, mottled, friable sandy clay loam. Many, small, rounded iron concretions are on the surface and throughout the profile. This soil is in areas between structures.

Soils in the Urban land part of this mapping unit cannot be identified because they are covered with houses, industrial buildings, paved streets, parking lots, sidewalks, driveways, airports, and other structures of community development.

Included with these soils in mapping are areas of Fuquay, Dothan, and Carnegie soils.

The land use has been established and is likely to remain much the same in future years. Only small soil areas between structures are usable for plants, lawns, gardens, and trees. Capability unit IIIe-2; not assigned to a woodland group.

Use of the Soils for Crops and Pasture

This section suggests general management of the soils of Colquitt and Cook Counties for crops and pasture. It also explains the capability grouping and lists and briefly describes all the capability units in the two counties. Estimated average acre yields of the principal crops under improved management are shown in table 2. The management, including fertilization needed to obtain these yields, is also suggested.

Sound reasoning must be used in the application of these interpretations because new technology, improved techniques, economic changes, and other factors influence alternative use and management of soils. Thus, changes in

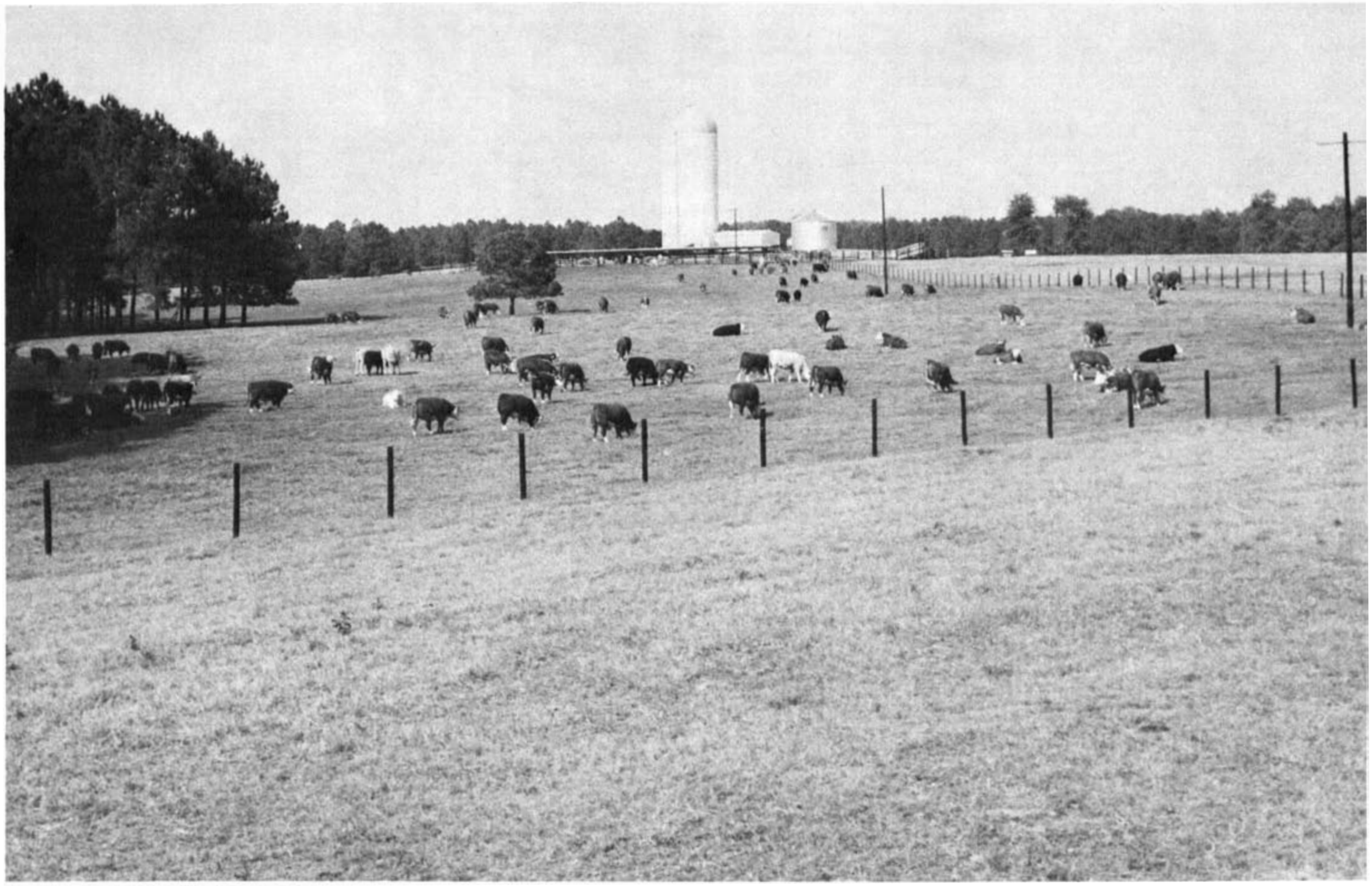

Figure 14.—**Cattle grazing a well-managed Coastal bermudagrass pasture on Tifton sandy loam, 2 to 5 percent slopes, eroded.**

the behavior of soils, especially crop yields, under new and different management techniques are not unusual and are anticipated.

Because concepts of many soil series have undergone changes in the last 10 to 20 years, it is suggested that current interpretations and predictions about a particular soil be carefully studied before they are applied to soils of the same name in older published surveys.

General Management [3]

The soils in Colquitt and Cook Counties have been grouped in 18 capability units. The soils in each unit have about the same limitations, need about the same management, and respond to management in about the same way.

The main practices needed in managing the soils in these two counties are those that control erosion, provide drainage, add organic matter, and increase fertility.

The intensity of the practices used to control erosion depends mainly on the crop, the steepness and length of slope, and the frequency and intensity of rainfall. On a gently sloping soil, such as Tifton loamy sand, 2 to 5 percent slopes, only contour cultivation and a cropping system that produces medium to large amounts of crop residue are needed. On a more sloping soil, such as Carnegie sandy loam, 5 to 8 percent slopes, eroded, contour farming is needed, with or without terraces, or stripcropping is needed in a rotation that includes close-growing annuals or perennials or crops that produce large amounts of residue.

The drainage needed depends on the amount of excess water and the kind of crop grown. Also needed is management that maintains good tilth and good crop growth.

Organic matter can be added to the soil by planting crops that produce large amounts of residue and by returning the residue to the soil. A crop sequence that includes perennial grasses or legumes is most beneficial if all the residue is turned under.

In some areas regular applications of both lime and fertilizer are needed to maintain fertility and good growth of plants. Lime and fertilizer should be applied according to the kind of soil and the needs of the plants and in the amounts indicated by soil tests.

Several management practices contribute to maintaining soil productivity and good tilth and to controlling erosion. Among these are regular applications of lime and fertilizer according to plant needs; good management of crop residue; a suitable cropping system; and contour farming (fig. 15) or terraces, or both.

[3] JAMES N. NASH, agronomist, Soil Conservation Service, helped prepare this section.

Complementary practices are beneficial to the soils in the two counties. Grassed waterways or outlets are essential in disposing of runoff water from fields farmed in straight rows across the slope, on the contour, terraced, or stripcropped. A field border of perennial grasses prevents erosion at the edge of fields and reduces weed growth. Farm roads and fences on the crest of the slope where the watershed divides, or on the contour, permit field and row arrangement that facilitates efficient fieldwork. The fences can also be located in or adjacent to natural waterways.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. It is a practical classification based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment. The soils are classified according to degree and kind of permanent limitation, but without consideration of major and generally exepensive landforming that would change the slope, depth, or other characteristics of the soils; and without consideration of possible, but unlikely, major reclamation projects.

In the capability system, all kinds of soil are grouped at three levels—the capability class, the subclass, and the unit.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products. In Colquitt and Cook Counties there are no class VIII soils.

Capability subclasses are soils grouped within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage) ; *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, but not in Colquitt and Cook Counties, shows that the chief limitation is climate that is too cold or too dry.

***Figure 15.*—Corn on the contour bordering a field of oats on Tifton loamy sand, 2 to 5 percent slopes.**

In class I there are no subclasses because the soils of this class have few limitations.

Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture or range, woodland, wildlife habitat, or recreation.

Capability units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example IIe-2 or IIIe-2. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

Capability unit numbers generally are assigned locally, but are a part of a statewide system. All of the units in the system are not represented by the soils of Colquitt and Cook Counties; therefore, the numbers are not consecutive. The capability classes, subclasses, and units in the capability system in Colquitt and Cook Counties are described in the list that follows. Use and management of the soils are suggested in the section "Descriptions of the Soils."

Class I. Soils have few limitations that restrict their use.

- Unit I-1. A nearly level, well-drained soil that has a sandy surface layer and a friable loamy subsoil.
- Unit I-2. A nearly level, well-drained soil that has a sandy surface layer and a friable loamy subsoil and contains iron concretions.

Class II. Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

- Subclass IIe. Soils subject to moderate erosion unless they are protected.
  - Unit IIe-1. Very gently sloping, well-drained soils that have a sandy surface layer and a friable loamy subsoil.
  - Unit IIe-2. Very gently sloping, well-drained soils that have a loamy to sandy surface layer and a friable loamy subsoil and contain iron concretions.
  - Unit IIe-4. A very gently sloping, well-drained soil that has a sandy surface layer and a mainly firm loamy subsoil.
- Subclass IIw. Soils have moderate limitations because of excess water.
  - Unit IIw-2. Nearly level, moderately well drained and somewhat poorly drained soils that have a sandy surface layer and a loamy subsoil; and Urban land.
- Subclass IIs. Soils have moderate limitations because of low to medium available moisture capacity.
  - Unit IIs-1. Nearly level to very gently sloping soils that have a sandy surface layer and a loamy subsoil.

Class III. Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

- Subclass IIIe. Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe-2. Very gently sloping to gently sloping, well-drained soils that have a sandy to loamy surface layer and a loamy subsoil; and Urban land.
- Subclass IIIw. Soils have severe limitations because of excess wetness.
  - Unit IIIw-1. Nearly level, somewhat poorly drained to poorly drained soils that are sandy to a depth of at least 24 inches and have a loamy subsoil.
  - Unit IIIw-2. Nearly level, somewhat poorly drained soils that have a sandy to loamy surface layer and loamy to clayey layers in the subsoil.

Class IV. Soils have very severe limitations that restrict the choice of plants, require very careful management, or both.

- Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.
  - Unit IVe-4. Gently sloping, well-drained soils that have a loamy to sandy surface layer and loamy subsoil.
- Subclass IVw. Soils have severe limitations because of excess water.
  - Unit IVw-3. Nearly level, moderately well drained to somewhat poorly drained soils that are sandy to a depth of 24 inches or more and are subject to frequent flooding.

Class V. Soils subject to little or no erosion, but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife food and cover.

- Subclass Vw. Soils too wet for cultivation; drainage or protection not feasible.
  - Unit Vw-1. Nearly level, poorly drained and very poorly drained soils that have a loamy to sandy surface layer and a loamy to clayey subsoil.
  - Unit Vw-2. Very poorly drained to poorly drained soils that are sandy to a depth of 28 inches or more and are sandy or loamy in the subsoil or underlying layers.
  - Unit Vw-4. A nearly level, poorly drained soil that has a sandy surface layer, an organic stained subsurface layer, and a loamy subsoil.
  - Unit Vw-5. A nearly level, poorly drained soil that has a loamy surface layer and subsoil.

Class VI. Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.

- Subclass VIe. Soils generally not suited to cultivation because they are steep and subject to erosion.
  - Unit VIe-2. Very gently sloping to sloping, well-drained soils that have a loamy to sandy surface layer and a clayey to loamy subsoil.

Class VII. Soils have very severe limitations that make them unsuited to cultivation and restrict their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIIs. Soils are not suited to cultivation because of very low available water capacity.

Unit VIIs-1. Nearly level to gently sloping, droughty soil that is sandy throughout.

Class VIII. Soils and landforms have limitations that preclude their use for commercial crop production and restrict their use to recreation, wildlife food and cover, or water supply, or to esthetic purposes. (No class VIII soils in Colquitt and Cook Counties.)

Estimated Yields [4]

In table 2 are estimates of average acre yields that can be expected for the principal crops and pasture grasses grown, under a high level of management, on the soils commonly used for those purposes. The estimates are based chiefly on records of yields on individual farms, on yield obtained during long-term experiments, and on estimates made by agronomists who are familiar with the soils and crops of the two counties.

[4] WILLIAM H. VARNER and WALTER R. PENN, district conservationists, Soil Conservation Service, helped prepare this section.

Under high level management, the farmer selects suitable plants and a suitable cropping system; prepares a good seedbed; plans high-quality seeds by a suitable method, at a suitable rate, and at the appropriate time; controls weeds and insect pests; inoculates the seeds of legumes; controls excess water by drainage, waterways, contour farming, or stripcropping; and applies fertilizer and lime as indicated by soil tests.

Dashes indicate that yields are so low or management needs are so great that growing the crop is not practical on the specified soil.

The following paragraphs give the rates of fertilization and seeding and other management required in obtaining the yields shown in table 2.

Corn.—Soils used for corn receive, per acre, 100 to 160 pounds of nitrogen (N), 50 to 70 pounds of phosphoric acid (P_2O_5), and 75 to 100 pounds of potash (K_2O). Elemental zinc is applied according to needs. Less fertilizer is used on droughty soils, and nitrogen applications are split on deep sandy soils.

Tobacco.—Soils used for tobacco receive, per acre, 50 to 60 pounds of nitrogen, 50 percent of which should be in nitrate form; 100 to 120 pounds of phosphoric acid;

TABLE 2.—*Estimated average yields per acre of principal crops under high-level management (no irrigation)*

[Only arable soils are listed. Absence of figure indicates crop is not suited to or is not commonly grown on the soil specified]

Soil	Corn	Tobacco (flue cured)	Peanuts (runner)	Cotton	Soybeans	Coastal bermudagrass		Bahiagrass pasture
						Hay	Pasture	
	Bu	*Lbs*	*Lbs*	*Lbs of lint*	*Bu*	*Tons*	*AUM* [1]	*AUM* [1]
Alapaha soils	---	---	---	---	---	---	---	6.0
Albandy sand	60	2,100	1,700	400	20	4.5	8.0	7.0
Carnegie sand loam, 5 to 8 percent slopes, eroded	60	---	2,000	550	22	4.5	6.5	6.5
Carnegie sand loam, 8 to 12 percent slopes, eroded	---	---	---	---	---	4.0	6.0	5.0
Chipley soils, frequently flooded	---	---	---	---	---	---	---	6.0
Cowarts loamy sand, 2 to 5 percent slopes	70	1,800	2,300	600	25	5.5	8.5	7.0
Cowarts loamy sand, 5 to 8 percent slopes	55	---	1,750	550	20	4.5	7.0	6.5
Dothan loamy sand, 0 to 2 percent slopes	85	2,400	2,400	800	38	6.0	9.5	8.5
Dothan loamy sand, 2 to 5 percent slopes	80	2,250	2,300	750	35	6.0	9.0	8.0
Dunbar fine sandy loam, frequently flooded	---	---	---	---	---	4.0	6.0	5.0
Esto complex, 2 to 8 percent slopes	---	---	---	---	---	3.0	5.0	4.0
Fuquay loamy sand, 1 to 4 percent slopes	80	2,400	2,900	700	30	5.0	8.5	7.0
Irvington loamy sand	85	2,500	2,700	700	40	6.0	10.0	9.5
Kershaw sand, 0 to 5 percent slopes	---	---	---	---	---	2.5	4.0	4.0
Leefield loamy sand	70	2,500	2,000	500	30	5.5	9.0	8.0
Mascotte sand	---	---	---	---	---	---	---	6.5
Ocilla loamy fine sand, frequently flooded	60	---	---	---	---	4.5	7.0	7.0
Ocilla loamy sand	70	2,600	2,000	550	30	5.0	8.5	7.5
Olustee sand	65	2,200	1,800	---	27	4.5	7.5	7.5
Orangeburg loamy sand, 3 to 6 percent slopes	85	2,700	2,800	750	35	6.5	10.5	8.5
Rains fine sandy loam	---	---	---	---	---	---	---	6.5
Robertsdale loamy sand	75	2,300	2,000	400	35	5.8	9.0	8.0
Stilson loamy sand	80	2,500	2,400	600	32	6.0	10.0	8.5
Sunsweet sandy loam, 5 to 12 percent slopes, eroded	---	---	---	---	---	2.0	4.5	4.5
Tifton loamy sand, 0 to 2 percent slopes	95	2,600	3,200	880	38	6.5	11.0	9.0
Tifton loamy sand, 2 to 5 percent slopes	90	2,550	3,000	825	35	6.5	10.5	8.5
Tifton sandy loam, 2 to 5 percent slopes, eroded	85	2,500	2,800	750	32	6.2	10.3	8.0
Tifton sandy loam, 5 to 8 percent slopes, eroded	80	2,400	2,500	650	30	6.0	10.0	8.0

[1] Animal-unit-months. The figures represent the number of months 1 acre will support one animal unit (one cow, steer, or horse; five hogs; or seven sheep or goats) without injury to pasture.

and 140 to 180 pounds of potash. Elemental magnesium is applied according to needs. The crop is grown on a suitable soil, and fertilizer is added in split applications. Planting is at a rate that provides 7,000 to 8,000 plants per acre. A suitable crop rotation is used, and insects and diseases are controlled.

Peanuts.—Soils used for peanuts receive, per acre, 0 to 20 pounds of nitrogen, 40 to 50 pounds of phosphoric acid, and 60 to 75 pounds of potash. A side dressing of 400 to 500 pounds of gypsum is also applied; 0.5 pound of elemental boron is used on deep sandy soils. The planting rate is 80 to 100 pounds of treated, shelled seed per acre.

Cotton.—Soils used for cotton receive, per acre, 60 to 120 pounds of nitrogen, 50 to 80 pounds of phosphoric acid, 75 to 120 pounds of potash, 0.5 pound of elemental boron, and 2.5 pounds of elemental manganese. A side dressing of 60 to 80 pounds of nitrogen is also applied; 0.5 pound of elemental boron and 2.5 pounds of elemental manganese are used. Planting is at a rate that provides 20,000 to 30,000 plants per acre. Insects and diseases are controlled.

Soybeans.—Soils used for soybeans for seed receive, per acre, 0 to 25 pounds of nitrogen, 20 to 50 pounds of phosphoric acid, and 60 to 100 pounds of potash. Seeding is in rows at the rate of 1 bushel per acre, and the seed is inoculated. Ordinarily planting is done between May 10 and 20. Late-maturing varieties are planted following small grain. Less fertilizer is used if the crop follows a heavily fertilized crop.

Coastal bermudagrass.—Early in spring the soils used for Coastal bermudagrass grown for hay or pasture receive, per acre, 30 to 60 pounds of nitrogen, 40 to 60 pounds of phosphoric acid, and 100 to 200 pounds of potash. An additional 20 to 50 pounds of nitrogen is applied after each cutting, or 60 to 90 pounds is added in split applications as needed for grazing. Every 3 to 5 years, 1 ton of lime is added, or lime is applied according to the need indicated by soil tests. The planting rate is 14,000 sprigs per acre. At regular intervals the grass is grazed or mowed for hay to control excessive growth.

Bahiagrass.—Late in winter or early in spring the soils used for bahiagrass grown for hay or pasture receive, per acre, 75 to 140 pounds of nitrogen, 40 to 70 pounds of phosphoric acid, and 60 to 90 pounds of potash. An additional 50 to 75 pounds of nitrogen is applied early in summer. By using more fertilizer, some farmers obtain higher yields than those shown in table 2. Every 3 to 5 years, 1 ton of lime is added, or lime is applied according to the need indicated by soil tests. The planting rate is 20 pounds of broadcast seed per acre. At regular intervals the grass is grazed or mowed for hay to control excessive growth.

Use of the Soils as Woodland [5]

Virgin forest covered about 99 percent of the total acreage in Colquitt and Cook Counties. Presently, about 46 percent of the total acreage is forested.

[5] W. P. Thompson, forester, Soil Conservation Service, helped prepare this section.

The principal commercial trees are slash pine, longleaf pine, loblolly pine, red oak, and water oak on the better drained ridges and slight ridges and cypress, blackgum, sweetgum, water oak, willow oak, sycamore, red maple, elm, and tupelo gum in the depressions, drainageways, bays, and swamps.

Woodland Groups

Management of woodland can be planned more effectively if soils are grouped according to those characteristics that affect the growth of trees and the management of stands. The soils of Colquitt and Cook Counties have been assigned to 12 woodland groups, according to their suitability for trees. Each group consists of soils that generally are suited to the same kinds of trees, need similar management, and have about the same potential productivity. The factors considered in grouping the soils are potential productivity, expressed as site index; species suitable for planting; and soil-related hazards and limitations.

Table 3 shows for each woodland group the degree of the hazards and limitations, the site index class for the principal trees, and the species suitable for planting. The information is based on pertinent research, measurements by foresters and soil scientists, and experience of woodland managers. Stilson-Urban land complex and Tifton-Urban land complex, 2 to 8 percent slopes, are not listed in table 3 because they are not used as commercial woodland. Detailed information about the soils in each group is in the section "Descriptions of the Soils."

Each woodland group is identified by a three-part symbol. The first part of the symbol is a numeral that indicates the relative potential productivity of the soils in the group: 1 means very high, 2 high, 3 moderately high, 4 moderate, and 5 low. These ratings are based on field determinations of average site indexes.

The second part of the symbol is a small letter. The letter *o* indicates that the soils have few limitations that restrict their use. All other letters indicate an important soil property that imposes a moderate or severe limitation that affects management. The letter *c* indicates that the main limitation is the kind or amount of clay, *s* that the soil is excessively sandy, and *w* that wetness is the main limitation.

The third part of the symbol is a numeral that shows the degree of limitation and the suitability of the soils for certain kinds of trees. Numerals 1, 2, and 3 identify soils that are well suited to needleleaf trees. The numeral 1 means that the soils have no particular limitation, 2 that they have one or more moderate limitations, and 3 that they have one or more severe limitations. Numerals 7, 8, and 9 identify soils that are well suited to both needleleaf and broadleaf trees (*9*). The numeral 7 means that the soils have no significant limitation, 8 means that they have one or more moderate limitations, and 9 that they have one or more severe limitations.

Some of the terms used in table 3 are defined in the following paragraphs.

Potential productivity for a given species is generally expressed as site index. A site index for a given soil is the average height, in feet, of the dominant or codominant trees at a given age. It is age 30 for cottonwood, age 35 for sycamore, and age 50 for all other species. The index

TABLE 3.—*Woodland groups and wood crops*

Woodland group and map symbols	Potential productivity		Species suitable for planting
	Tree species	Site index class	
2o1: Soils have a sandy to loamy surface layer and a loamy subsoil; high potential productivity; no serious management limitations; best suited to needleleaf trees. CoC2, CoD2, CqB, CqC, DaA, DaB, OeB, TqA, TqB, TuB2, TuC2.	Slash pine Loblolly pine Longleaf pine	90 90 70	Slash pine and loblolly pine.
2o7: Soils have a sandy surface layer and a loamy subsoil; high potential productivity; no serious management limitations; suited to both needleleaf and broadleaf trees. Ij.	Slash pine Loblolly pine Yellow-poplar Red oaks White oaks	90 90 100 ------------ ------------	Slash pine, loblolly pine, yellow-poplar, black walnut, and cherrybark oak.
2w2: Seasonally wet soils that have a loamy to sandy surface layer and subsoil or underlying layer; high potential productivity; moderate equipment limitations and slight to moderate seedling mortality; best suited to needleleaf trees. Ai, Cy.	Loblolly pine Slash pine Longleaf pine	90 90 70	Loblolly pine and slash pine.
2w8: Seasonally wet soils that have a sandy or loamy surface layer and a loamy to clayey subsoil; high potential productivity; moderate equipment limitations and slight to moderate seedling mortality; suited to both needleleaf and broadleaf trees. Dx, Rl.	Slash pine Loblolly pine Sweetgum Yellow-poplar Water oak Sycamore	90 90 90 100 90 ------------	Slash pine, loblolly pine, sweetgum, yellow-poplar, sycamore, and cherrybark oak.
2w3. Excessively wet soils that have a loamy surface layer and subsoil; high potential productivity; severe equipment limitations and seedling mortality unless surface drainage is adequate; best suited to needleleaf trees. Ros.	Slash pine Longleaf pine Loblolly pine	90 70 90	Slash pine and loblolly pine.
2w9. Excessively wet soils that have a loamy surface layer and a clayey subsoil; high potential productivity; severe equipment limitations and seedling mortality unless surface drainage is adequate; suited to both broadleaf and needleleaf trees. Bm, Grd.	Slash pine [1] Water tupelo Loblolly pine [1] Sweetgum [1]	90 90 90	Loblolly pine,[2] slash pine,[2] water tupelo, sweetgum,[2] sycamore,[2] water oak,[2] and cherrybark oak.[2]
3o1. Soils have a sandy surface layer over a clayey subsoil; moderately high productivity; no serious management problems; best suited to needleleaf trees. EfC.	Slash pine Loblolly pine Longleaf pine	80 80 60	Slash pine and loblolly pine.
3s2. Soils have a thick sandy surface layer over a loamy subsoil; moderately high productivity; moderate equipment limitations and seedling mortality; best suited to needleleaf trees. FsB, Se.	Slash pine Loblolly pine Longleaf pine	80 80 60	Slash pine and loblolly pine.
3c2. Soils have a loamy surface layer and a clayey subsoil; moderately high productivity; moderate equipment limitations and seedling mortality; best suited to needleleaf trees. ShD2.	Slash pine Longleaf pine Loblolly pine	80 60 80	Slash pine and loblolly pine.
3w2. Seasonally wet soils that have a sandy surface layer and mainly a loamy subsoil; moderately high potential productivity; moderate equipment limitations and slight to moderate seedling mortality; best suited to needleleaf trees. Ad, Ls, Mn, On, Oh, Oa.	Slash pine Loblolly pine Longleaf pine	80 80 70	Slash pine and loblolly pine.
3w3. Excessively wet soils that have a loamy or sandy surface layer and a sandy underlying layer or a loamy subsoil; high potential productivity; severe equipment limitations and seedling mortality unless drainage is adequate; best suited to needleleaf trees. OP.	Loblolly pine [1] Slash pine [1] Longleaf pine [1]	80 80 70	Slash pine [2] and loblolly pine.[2]
5s3. Droughty, sandy soils that have low potential productivity; severe seedling mortality and equipment limitations; best suited to needleleaf trees. KdB.	Slash pine Longleaf pine	60 50	Slash pine, longleaf pine, and sand pine.

[1] Potential productivity is attainable only where surface drainage is adequate.
[2] Tree planting is feasible only where surface drainage is adequate.

in table 3 has been rounded to units of 10 and is expressed as site index class.

The species listed in table 3 are those to be favored in existing stands and those preferable for planting. Selection of preferred species is based on growth, quality, value, and marketability.

The equipment limitation is based on soil characteristics and topographic features that restrict the use of conventional equipment. Wetness and unfavorable soil texture are the limiting factors. *Slight* indicates no restriction in the use of equipment; *moderate*, that not all kinds of equipment can be used because of seasonable wetness or instability; and *severe*, that special equipment is needed, and the use of such equipment is restricted by soil texture or seasonal wetness.

Seedling mortality refers to the expected loss of naturally occurring or planted seedlings that is a result of unfavorable soil characteristics or topographic features, but not a result of plant competition. *Slight* indicates that the expected loss of seedlings is no more than 25 percent and natural regeneration and a satisfactory stand can be expected from the original planting. *Moderate* indicates that

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the expected loss of seedlings is 25 to 50 percent, natural regeneration cannot be relied on, and restocking and replanting are necessary. *Severe* indicates that the expected loss of seedlings is more than 50 percent and that superior planting, good planting stock, and replanting are needed.

Soil Interpretations for Wildlife Habitat [6]

The wildlife population of any area depends on the availability of food, cover, and water in a suitable combination. Information about soils provides a valuable tool in selecting desirable locations, establishing desirable vegetation, and developing water supplies.

In table 4 the soils in Colquitt and Cook Counties are rated for elements of wildlife habitat and for three kinds of wildlife. These ratings refer only to the suitability of the soil and do not take into account the climate, the present use of the soil, or the distribution of wildlife and human populations. The suitability of individual sites has to be determined by onsite inspection. Stilson-Urban land complex and Tifton-Urban land complex, 2 to 8 percent slopes, are not listed in table 4.

Suitability is expressed as well suited, suited, poorly suited, and not suited. *Well suited* means that habitat generally is easily created, improved, or maintained; that the soil has few or no limitations that affect management; and that satisfactory results can be expected. *Suited* means that habitat can be created, improved, or maintained in most places; that the soil has moderate limitations that affect management; and that moderate intensity of management and fairly frequent attention may be required for soil protection and satisfactory results. *Poorly suited* indicates that habitat can be created, improved, or maintained in most places; that the soil has rather severe limitations; that habitat management is difficult and expensive and requires intensive effort; and that results are not always satisfactory. *Not suited* indicates that it is impractical or impossible to create, improve, or maintain habitat and that unsatisfactory results are probable.

Elements of wildlife habitat considered in table 8 are explained in the paragraphs that follow.

Grain and seed crops are grain-producing or seed-producing annual plants, such as corn, sorghum, millet, proso, and soybeans.

Grasses and legumes are domestic grasses and legumes that can be established by planting and that furnish food and cover for wildlife. Among the grasses are bahiagrass,

[6] PAUL D. SCHUMACHER, biologist, Soil Conservation Service, helped prepare this section.

TABLE 4.—*Suitability of soils for elements*

[Mapping units SuC and TnC are not listed

Soil series and map symbols	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants
Alapaha: Ai	Poorly suited	Poorly suited	Poorly suited	Suited
Albany: Ad	Suited	Suited	Suited	Suited
Bayboro: Bm	Not suited	Poorly suited	Poorly suited	Suited
Carnegie:				
CoC2	Well suited	Well suited	Well suited	Suited
CoD2	Poorly suited	Suited	Suited	Suited
Chipley: Cy	Poorly suited	Suited	Suited	Suited
Cowarts: CqB, CqC	Well suited	Well suited	Well suited	Suited
Dothan: DaA, DaB	Well suited	Well suited	Well suited	Well suited
Dunbar: Dx	Suited	Well suited	Well suited	Well suited
Esto: EfC	Suited	Well suited	Suited	Suited
Fuquay: FsB	Suited	Well suited	Well suited	Suited
Grady: Grd	Not suited	Poorly suited	Poorly suited	Suited
Irvington: Ij	Well suited	Well suited	Well suited	Well suited
Kershaw: KdB	Not suited	Poorly suited	Poorly suited	Poorly suited
Leefield: Ls	Well suited	Suited	Well suited	Suited
Mascotte: Mn	Poorly suited	Poorly suited	Suited	Poorly suited
Ocilla:				
Oh	Well suited	Suited	Well suited	Suited
On	Poorly suited	Poorly suited	Poorly suited	Well suited
Olustee: Oa	Suited	Suited	Suited	Suited
Orangeburg: OeB	Well suited	Well suited	Well suited	Well suited
Osier and Pelham: OP	Not suited	Not suited	Poorly suited	Suited
Rains: Ros	Poorly suited	Poorly suited	Suited	Suited
Robertsdale: Rl	Suited	Well suited	Well suited	Well suited
Stilson: Se	Suited	Well suited	Well suited	Suited
Sunsweet: ShD2	Poorly suited	Suited	Suited	Suited
Tifton:				
TqA, TqB, TuB2	Well suited	Well suited	Well suited	Well suited
TuC2	Suited	Well suited	Well suited	Well suited

ryegrass, and panicgrass. Legumes are clover, annual lespedeza, and perennial lespedeza.

Wild herbaceous upland plants are native or introduced perennial grasses, forbs, and weeds that provide food and cover for upland wildlife. Examples of these are beggarweed, perennial lespedeza, partridgepea, wild bean, pokeberry, shrub lespedeza, and cheat.

Hardwood woody plants are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, or foliage (browse) used extensively as food by wildlife. These plants commonly become established through natural processes, but they can be planted. Examples are oak, beech, cherry, dogwood, viburnum, maple, grape, persimmon, honeysuckle, greenbrier, and elaeagnus.

Coniferous woody plants are cone-bearing trees and shrubs that are used mainly as cover but can furnish food in the form of browse, seeds, or fruitlike cones. They become established through natural processes or may be planted. Examples are pines, cedars, and ornamentals. Soil properties that tend to promote rapid growth and early canopy closure are adverse to wildlife habitat. Areas of high pine production, for example, are of low value as wildlife habitat.

Wetland food and cover plants are annual or perennial wild herbaceous plants that grow on moist to wet sites. They do not include submerged or floating aquatics. These plants furnish food or cover mostly for wetland wildlife. Some examples are smartweed, wild millet, spikerush and other rushes, sedges, burreed, tearthumb, and ancilema.

Shallow-water developments are those where low dikes and water control structures are established to create habitat principally for waterfowl. They can be designed so that they can be drained, planted, and flooded or they can be used as permanent impoundments for growing submersed aquatics.

The three kinds of wildlife considered in table 4 are briefly described in the paragraphs that follow.

Openland wildlife are cottontail rabbit, fox, quail, dove, meadowlark, field sparrow, and other birds and mammals that normally live on cropland, pasture, meadow, lawn, and other openland areas where grasses, herbs, and shrubby plants grow.

Woodland wildlife are opossum, raccoon, squirrel, deer, wild turkey, thrush, and other birds and mammals that normally live in wooded areas where hardwood trees and shrubs and coniferous trees grow.

Wetland wildlife are duck, geese, heron, snipe, muskrat, beaver, mink, and other birds and mammals that normally live in wet areas, marshes, and swamps.

Assistance in planting and establishing habitat for wildlife or fish can be obtained from the district conservationist of the Soil Conservation Service.

of wildlife habitat and kinds of wildlife

because they are chiefly urban areas]

Coniferous woody plants	Wetland food and cover plants	Shallow-water developments	Kinds of wildlife		
			Openland	Woodland	Wetland
Suited	Well suited	Well suited	Poorly suited	Suited	Well suited.
Suited	Poorly suited	Poorly suited	Suited	Suited	Poorly suited.
Poorly suited	Well suited	Well suited	Poorly suited	Suited	Well suited.
Well suited	Not suited	Not suited	Well suited	Suited	Not suited.
Well suited	Not suited	Not suited	Suited	Suited	Not suited.
Suited	Poorly suited	Not suited	Poorly suited	Suited	Not suited.
Well suited	Not suited	Not suited	Well suited	Suited	Not suited.
Well suited	Not suited	Not suited	Well suited	Well suited	Not suited.
Suited	Suited	Poorly suited	Suited	Suited	Poorly suited.
Well suited	Not suited	Not suited	Suited	Suited	Not suited.
Suited	Not suited	Not suited	Well suited	Suited	Not suited.
Poorly suited	Suited	Well suited	Not suited	Suited	Suited.
Suited	Poorly suited	Not suited	Well suited	Well suited	Not suited.
Poorly suited	Not suited	Not suited	Poorly suited	Poorly suited	Not suited.
Suited	Poorly suited	Poorly suited	Well suited	Suited	Poorly suited.
Suited	Poorly suited	Poorly suited	Poorly suited	Suited	Poorly suited.
Suited	Poorly suited	Poorly suited	Well suited	Suited	Poorly suited.
Well suited	Suited	Suited	Poorly suited	Well suited	Suited.
Suited	Not suited	Poorly suited	Suited	Suited	Poorly suited.
Well suited	Not suited	Not suited	Well suited	Well suited	Not suited.
Poorly suited	Suited	Suited	Not suited	Suited	Suited.
Suited	Suited	Well suited	Poorly suited	Suited	Suited.
Suited	Poorly suited	Poorly suited	Well suited	Well suited	Poorly suited.
Suited	Poorly suited	Not suited	Well suited	Suited	Not suited.
Suited	Not suited	Not suited	Suited	Suited	Not suited.
Well suited	Not suited	Not suited	Well suited	Well suited	Not suited.
Well suited	Not suited	Not suited	Well suited	Well suited	Not suited.

Soil Properties Considered in Town and Country Planning [7]

This section was prepared mainly for planners, developers, landscape architects, builders, zoning officials, realtors, private and potential landowners, and others interested in use of the soils in Colquitt and Cook Counties for purposes other than farming. The demand for housing developments, shopping centers, schools, parks, golf courses, and other facilities is increasing as population increases.

In selecting a site for a home, a highway, an industry, a recreational use, or some other nonfarm purpose, the potential user must determine the suitability of the soils at each site. Some of the more common properties that affect the use of the soils for nonfarm purposes are soil texture, reaction, and depth; shrink-swell potential; steepness of slope; permeability; depth to the water table; and hazard of flooding. On the basis of these and related characteristics, soil scientists and engineers have rated the soils of Colquitt and Cook Counties for specific nonfarm purposes.

Considered in table 5 are foundations for residences, septic tank absorption fields, sewage lagoons, structures for light industry, trafficways, playgrounds, campsites and picnic areas, and gardens. The degree of limitation is expressed as slight, moderate, or severe. If the rating is *moderate* or *severe*, the main limitation or limitations are noted. A rating of *slight* means that the soils have properties favorable for the rated use. Limitations are so minor that they can be easily overcome, and good performance and low maintenance can be expected. A rating of *moderate* means that the soils have properties moderately favorable for the rated use. Limitations can be overcome or modified with planning, design, or special maintenance. A rating of *severe* means that the soils have one or more properties unfavorable for the rated use. Limitations are difficult and costly to modify or overcome and major soil reclamation, special design, or intense maintenance is required.

The information in table 5 and the soil map at the back of this survey can help in selecting desirable sites and in planning community developments. Additional information is in engineering tables 7 and 8. The tables, however, do not eliminate the need for an investigation at the site of the planned development. Major features that limit the soils for specified nonfarm uses are defined in the paragraphs that follow.

Foundations for residences.—The main features that limit the use of soils as foundations for residences are a seasonal high water table, flooding, slope, shrink-swell potential, and unstable soil material. The ratings in table 5 are for houses of three stories or less and no basements.

Septic tank absorption fields.—A septic tank absorption field is a sewage system in which waste is distributed to a central tank and the effluent from the tank is dispersed over a fairly large area of field lines buried in the soil. The major limiting features are a seasonal high water table, flooding, slow permeability, and a sandy texture, all of which would allow contamination of nearby water supplies.

Sewage lagoons.—For sewage lagoons, the soil should be considered as a floor for the impounded area and as material for the dam. The requirements for the dam are the same as for other embankments that impound water. Features considered are permeability, slope, content of organic matter, and flood hazard.

Structures for light industry.—Considered in this column are structures, no more than three stories high, used for stores, offices, and small buildings in areas where facilities for disposing of sewage are available. The properties considered are slope, depth to seasonal high water table, hazard of flooding, and shrink-swell potential.

Trafficways.—This term refers to low-cost roads and streets that can be built without much cutting, filling, and preparation of subgrade. The properties important in rating the limitations of the soils are slope, depth to the seasonal high water table, hazard of flooding, and traffic-supporting capacity. Traffic-supporting capacity refers to the capacity of an undisturbed soil to support moving loads.

Playgrounds.—Playgrounds are used for baseball, football, tennis, badminton, and other organized games. These areas are subject to heavy foot traffic. Generally, a nearly level soil that has a firm surface layer and good drainage is needed. Also, it should be free of rocks and rock fragments. The major limiting features are a seasonal high water table, flooding, slope, and a sandy surface layer.

Campsites and picnic areas.—Campsites require little site preparation except in areas used for tents or for parking. The soils must support heavy vehicular and foot traffic. Picnic areas also require little site preparation. These areas are suitable for pleasure outings at which a meal is eaten outdoors. Tables and fireplaces are generally furnished. Major features that limit the use of soils for campsites and picnic areas are a seasonal high water table, flooding, slope, and texture of the surface layer.

Gardens.—Gardens refer to vegetable and flower gardens around the home. Features considered are productivity, depth to the seasonal high water table, likelihood of flooding, erodibility, droughtiness, tilth, and presence of rock fragments.

Engineering Uses of the Soils [8]

Soil engineering, a part of structural engineering, deals with soils used as structural material and as foundation material on which structures are built. Soil can have widely different engineering properties within the space covered by a single project. Generally, it is used in the area and in the condition in which it occurs. A large part of soil engineering is concerned with locating various soils, determining their engineering properties, correlating these properties with the requirements of the job, and selecting the best soil material or site for each job. Among the properties most important to engineers are permeability, shear strength, compaction characteristics, drainage, shrink-swell potential, grain-size distribution, plasticity index,

[7] SHELBY R. LASTINGER, agricultural engineer, prepared most of this section.

[8] By SHELBY R. LASTINGER, agricultural engineer, Soil Conservation Service.

and reaction, or pH value. Also important is the depth to seasonal high water table.

The soil survey of Colquitt and Cook Counties contains information useful in street and road, farm, and sanitary engineering. It also contains information about the development of communities, including recreation facilities. The information can be used to—

1. Make studies of soil and land use that will aid in selecting and developing industrial, commercial, residential, and recreational sites.
2. Make preliminary estimates of the soil properties that are important in planning farm drainage systems, ponds, irrigation systems, terraces, and diversions.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting locations for highways, airports, pipelines, and cables and in planning detailed investigations at the selected locations.
4. Locate probable sources of sand, road fill, and other construction materials.
5. Supplement the information from other published maps and reports and aerial photographs for the purpose of making maps and reports that can be used readily by engineers.
6. Evaluate the limitation of soils used for foundations for houses, septic tank filter fields, playgrounds, campsites and picnic areas, structures for light industries, trafficways, gardens, and sewage lagoons.

With the soil map for identification of soil areas, the engineering interpretations in tables 6, 7, and 8 can be useful for many purposes. It should be emphasized, however, that the interpretations may not eliminate the need for sampling and testing at the site of specific engineering works where loads are heavy and where the excavations are deeper than here reported. It should be noted that small areas of other soils are included in some mapping units. Even in these situations, however, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Some terms have a special meaning in soil science that may not be familiar to engineers. These terms are defined in the Glossary.

Additional information useful to engineers can be found in other sections of the soil survey, particularly the sections "Descriptions of the Soils" and "Formation and Classification of the Soils."

Engineering Classification Systems

The two systems most commonly used in classifying samples of soil for engineering are the AASHO system adopted by the American Association of State Highway Officials (*2*) and the Unified system (*10*) used by the Soil Conservation Service, Department of Defense, and other agencies.

The AASHO system classifies soil according to those properties that affect use in highway construction. In this system, a soil is in one of seven basic groups ranging from A–1 through A–7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A–1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme are clayey soils that have low strength when wet. The best soils for subgrade are therefore classified as A–1, the next best as A–2, and so on to class A–7, the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A–1, A–2, and A–7 groups are divided as follows: A–1–a, A–1–b; A–2–4, A–2–5, A–2–6, A–2–7; and A–7–5, A–7–6. If soil material is near a classification boundary it is given a symbol that shows both classes, for example, A–2 or A–4. Within each group, the relative engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 for the poorest. The AASHO classification for tested soils, index numbers in parentheses, is shown in table 6. The estimated classification for all soils mapped in the survey area is shown in table 7.

In the Unified system, soils are classified according to particle-size distribution, plasticity, liquid limit, and organic-matter content. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes, for example, MH–CH.

Test Data

Samples from soils of four soil series recognized in Colquitt and Cook Counties were tested in accordance with standard procedures in evaluating the soil material for engineering purposes. The results of these tests are shown in table 6.

Soils representing three soil series were sampled at different locations so that an approximation of the range of characteristics for the series could be obtained. The modal profiles are representative of the series, but the additional ones show significant variations. These variations probably are not the maximum variations for the series. Because the samples were obtained at a depth of 5 feet or less, the test data is not adequate in estimating the characteristics of soil material in deep cuts.

In the moisture-density test, soil material was compacted in a mold several times with a constant compaction effort, each time at a successively higher moisture content. The density, or unit weight, of the soil material increases until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest density obtained in the compaction test is termed maximum dry density. Moisture density data are important because, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

Data on volume change indicate the amount of shrinking and swelling that is obtained from samples prepared at optimum moisture content and then subjected to drying and wetting. The total change that can occur in a specified soil is the sum of the values given for shrinking and for swelling.

TABLE 5.—*Limitations of soils to be*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in for referring to other series that appear

Soil series and map symbols	Foundations for residences	Septic tank absorption fields	Sewage lagoons
Alapaha: Ai	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.
Albany: Ad	Moderate: seasonal high water table.	Severe: seasonal high water table.	Severe: moderately rapid permeability in upper 56 inches.
Bayboro: Bm	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Carnegie: CoC2, CoD2	Moderate: moderate shrink-swell potential in some layers; slope of more than 8 percent.	Severe: slow permeability.	Moderate for CoC2. Severe for CoD2: slope.
Chipley: Cy	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: rapid permeability; flooding.
Cowarts: CqB, CqC	Slight	Severe: slow permeability.	Moderate: slope
Dothan: DaA, DaB	Slight	Moderate to severe: moderately slow permeability below depth of about 42 inches.	Moderate: moderate permeability to a depth of about 42 inches.
Dunbar: Dx	Severe: seasonal high water table; flooding.	Severe: slow permeability; flooding.	Severe: flooding
Esto: EfC	Moderate: moderate shrink-swell potential.	Severe: slow permeability.	Moderate: slope
Fuquay: FsB	Slight	Moderate: slow permeability below depth of about 60 inches.	Moderate: rapid to moderate permeability to depth of 32 inches.
Grady: Grd	Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.	Moderate to severe: seasonal high water table; flooding.
Irvington: Ij	Moderate: seasonal high water table.	Severe: slow permeability.	Slight
Kershaw: KdB	Slight	Severe: poor filtering qualities; contamination hazard to nearby water supplies.	Severe: very rapid permeability.

considered in town and country planning

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions in the first column of this table]

Structures for light industry	Trafficways	Playgrounds	Campsites and picnic areas	Gardens
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Severe: flooding; moderate to high shrink-swell potential.	Severe: seasonal high water table; poor traffic-supporting capacity.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Moderate for CoC2: moderate shrink-swell potential. Severe for CoD2: slope.	Moderate: moderate shrink-swell potential.	Moderate for CoC2. Severe for CoD2: slope.	Moderate: slow permeability; slope.	Moderate: severe erosion hazard.
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.	Severe: seasonal high table; flooding.
Slight for CqB. Moderate for CqC: slope.	Slight	Moderate for CqB. Severe for CqC: slope.	Slight for picnic areas. Moderate for campsites: slow permeability.	Moderate: moderate to severe erosion hazard.
Slight	Slight	Slight for DaA. Moderate for DaB: slope.	Slight	Slight for DaA. Moderate for DaB: slope; moderate erosion hazard.
Severe: flooding; moderate shrink-swell potential.	Severe: flooding; poor traffic-supporting capacity.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Moderate: moderate shrink-swell potential; slope.	Moderate: moderate shrink-swell potential.	Moderate: slope	Slight for picnic areas. Moderate for campsites: slow permeability.	Moderate: severe erosion hazard.
Slight	Slight	Moderate: slope	Slight	Moderate: slightly droughty.
Severe: flooding; seasonal high water table.	Severe: flooding; seasonal high water table.	Severe: flooding; seasonal high water table.	Severe: flooding; seasonal high water table.	Severe: seasonal high water table; flooding.
Moderate: seasonal high water table.	Slight to moderate: seasonal high water table.	Moderate: seasonal high water table.	Slight to moderate: seasonal high water table.	Moderate: seasonal high water table.
Moderate: needs binder to improve stability.	Moderate: needs binder to improve stability.	Severe: sand texture to depth of 72 inches.	Severe: sand texture to depth of 72 inches.	Severe: droughty; low productivity.

TABLE 5.—*Limitations of soils to be*

Soil series and map symbols	Foundations for residences	Septic tank absorption fields	Sewage lagoons
Leefield: Ls	Moderate: seasonal high water table.	Severe: seasonal high water table.	Moderate: seasonal high water table.
Mascotte: Mn	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Ocilla:			
Oh	Moderate: seasonal high water table.	Severe: seasonal high water table.	Moderate to severe: moderate permeability; seasonal high water table.
On	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding
Olustee: Oa	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Orangeburg: OeB	Slight	Slight	Moderate: moderate permeability.
*Osier: OP For Pelham part of OP, see Pelham series.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding; variable substratum.
Pelham Mapped only with Osier soils.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Rains: Ros	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Moderate: moderate permeability; flooding.
Robertsdale: Rl	Moderate: seasonal high water table.	Severe: seasonal high water table; moderately slow permeability.	Slight
*Stilson: Se, Suc No rating for Urban land part of Suc.	Slight	Moderate: seasonal high water table.	Moderate: moderate permeability.
Sunsweet: ShD2	Moderate: moderate shrink-swell potential; slope.	Severe: moderately slow permeability.	Moderate to severe: slope.
*Tifton:			
TqA, TqB, TuB2	Slight	Moderate: moderate permeability.	Moderate: moderate permeability.
TnC, TuC2 No rating for Urban land part of TnC.	Slight	Moderate: moderate permeability.	Moderate: moderate permeability; slope.
Urban land. Mapped only with Stilson and Tifton soils. Properties too variable to rate; onsite examination needed in each mapped area.			

considered in town and country planning—Continued

Structures for light industry	Trafficways	Playgrounds	Campsites and picnic areas	Gardens
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal water table.	Moderate: seasonal high water table.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.	Severe: flooding; seasonal high water table.	Severe: seasonal high water table; flooding.
Severe: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Severe: seasonal high water table.
Slight	Slight	Moderate: slope	Slight	Moderate: moderate erosion hazard.
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.	Severe: flooding; seasonal high water table.	Severe: seasonal high water table; flooding.
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: flooding; seasonal high water table.
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Moderate: seasonal high water table.	Slight	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Slight.
Moderate: moderate shrink-swell potential; slope.	Moderate: moderate shrink-swell potential.	Severe: slope	Moderate: slope	Severe: slope; low productivity.
Slight	Slight	Slight for TqA. Moderate for TqB and TuB2: slope.	Slight	Slight for TqA. Moderate for TqB and TuB2: slope; erosion hazard.
Moderate: slope	Moderate: slope	Moderate to severe: slope.	Slight	Moderate: severe erosion hazard.

TABLE 6.—*Engineering*

[Tests were performed by the State Highway Department of Georgia and the Bureau of Public Roads, in

Soil name and location	Parent material	SCS report No. S63-Ga-35	Depth	Moisture density [1]		Volume change [2]		
				Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
			Inches	*Lb per cu ft*	*Percent*	*Percent*	*Percent*	*Percent*
Alapaha loamy sand in Colquitt County:								
1.5 mile southwest of Norman Park along U.S. Highway 319; left on county road for 0.2 mile, west side of road. (Fewer fines in the 20–50 inch layer than in modal.)	Unconsolidated beds of sand and sandy clay loam.	5-2	5–20	119	9	0. 0	1. 5	1. 5
		5-3	20–35	120	11	2. 5	0. 9	3. 4
		5-4	35–50	118	12	2. 1	3. 8	5. 1
3.5 miles northeast of Thomas County line along U.S. Highway 319, west side of road in wooded area. (Modal)	Unconsolidated beds of sand and sandy clay loam.	6-2	5–20	116	10	0. 7	3. 8	4. 5
		6-3	20–34	118	11	2. 8	1. 2	4. 0
		6-4	34–50	114	14	5. 0	4. 7	9. 7
Grady soils in Cook County:								
0.75 mile west of No Mans Friend Pond. (Modal)	Marine sediments.	3-1	0–6	92	20	2. 9	9. 5	12. 4
		3-3	9–38	98	22	10. 3	5. 0	15. 3
		3-4	38–55	95	24	12. 6	6. 0	18. 6
5 miles east of Adel. (More fines in the 15–50 inch layer than in modal.)	Marine sediments.	1-1	0–9	91	23	4. 1	9. 5	13. 6
		1-3	15–31	93	24	13. 0	3. 8	16. 8
		1-4	31–50	94	26	10. 9	4. 0	14. 9
Irvington loamy sand in Cook County:								
2.5 miles northeast of Sparks and 0.75 mile east of county road. (Modal.)	Marine deposits.	4-1	0–8	122	9	0. 2	1. 8	2. 0
		4-4	24–40	109	17	3. 9	4. 4	8. 3
		4-5	40–55	112	14	1. 7	0. 5	2. 2
4 miles east of Adel and 0.25 mile north of State Route 37. (More fines in the 33–50 inch layer than in modal.)	Marine deposits.	6-1	0–9	117	11	0. 2	5. 4	5. 6
		6-3	25–33	108	17	4. 6	3. 4	8. 0
		6-4	33–50	104	18	3. 9	2. 9	6. 8
Ocilla loamy sand in Colquitt County:								
2 miles south of Mt. Sinai Church, west side of road in wooded area. (Modal)	Alluvium.	2-2	5–22	115	9	0. 0	1. 7	1. 7
		2-4	26–37	115	13	1. 8	6. 0	7. 8
		2-5	37–60	107	17	8. 1	6. 2	14. 3

[1] Based on AASHO Designation: T 99–70, Method A (*2*).
[2] Based on "A System of Soil Classification" by W. F. Abercrombie (*1*).
[3] Mechanical analysis according to the AASHO Designation: T 88–70 (*2*). Results by this procedure frequently may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural classes for soils.

test data

accordance with standard procedures of the American Association of State Highway Officials (AASHO)]

Mechanical analysis [3]											Liquid limit	Plasticity index	Classification	
Percentage passing sieve—							Percentage smaller than—						AASHO [4]	Unified [5]
1 in.	¾ in.	⅜ in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.	*Percent*			
------	------	------	100	99	78	15	15	10	5	4	--------	[6] NP	A-2-4(0)	SM
------	------	------	100	98	78	31	28	25	22	20	22	10	A-2-4(0)	SC
------	------	100	99	98	80	31	27	24	20	20	--------	NP	A-2-4(0)	SM
------	------	------	--------	100	94	31	20	13	10	8	--------	NP	A-2-4(0)	SM
------	------	------	--------	100	95	41	31	27	23	22	22	10	A-4(1)	SC
------	------	------	--------	100	94	40	32	27	25	23	22	7	A-4(1)	SM-SC
------	------	------	100	99	89	50	45	36	22	15	[6] NP	NP	A-4(3)	SM
------	------	------	--------	100	93	64	63	60	55	52	36	22	A-6(11)	CL
------	------	------	--------	100	92	63	62	60	56	53	42	21	A-7-6(10)	CL
------	------	------	100	99	93	55	52	42	27	20	24	6	A-4(4)	ML-CL
------	------	------	--------	100	98	78	76	72	67	64	39	15	A-6(10)	ML-CL
------	------	------	--------	100	97	80	79	74	70	66	42	17	A-7-6(11)	ML-CL
------	------	------	100	97	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
------	------	100	93	92	82	37	34	30	27	25	NP	NP	A-4(0)	SM
100	99	96	92	89	79	34	33	30	25	23	30	12	A-2-6(0)	SC
------	100	98	92	90	79	20	18	13	9	7	NP	NP	A-2-4(0)	SM
100	99	90	90	84	77	39	36	32	29	27	31	15	A-6(2)	SC
------	------	100	99	98	94	51	46	41	38	36	31	15	A-6(5)	CL
------	100	97	30	10	11	6	4	------	------	------	--------	NP	A-2-4(0)	SM
------	100	97	35	26	20	16	15	------	------	------	--------	NP	A-2-4(0)	SM
------	100	96	56	53	47	39	36	25	------	------	--------	12	A-6(5)	CL

[4] Based on AASHO Designation: M145-66 (*2*).
[5] Based on MIL-STD-619B (*10*). SCS and the Bureau of Public Roads have agreed to consider that all soils having plasticity indexes within two points of A-line are to be given a borderline classification. Examples of borderline classifications obtained by this use are SM-SC and ML-CL.
[6] NP=Nonplastic.
[7] Insufficient material.

TABLE 7.—*Estimates of soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in referring to other series that appear in the first column of this table.

Soil series and map symbols	Depth to seasonal high water table	Depth from surface (typical profile)	Classification		
			USDA texture	Unified	AASHO
		Inches			
Alapaha: Ai	0 to 15 inches for 3 to 6 months each year.	0–26	Loamy sand	SM	A–2
		26–66	Sandy clay loam	SC, SM, or SC–SM	A–2, A–4, A–6
Albany: Ad	15 to 30 inches for 1 to 2 months each year.	0–56	Sand	SP–SM or SM	A–3, A–2
		56–66	Sandy loam	SC or SM	A–2
Bayboro: Bm	0 to 15 inches for more than 9 months each year.	0–14	Mucky loam	SC or CL	A–4, A–6
		14–22	Fine sandy loam	SM	A–2
		22–58	Clay	CL or CH	A–6, A–7
		58–70	Sandy clay	CL	A–6
Carnegie: CoC2, CoD2	More than 5 feet	0–5	Sandy loam	SM	A–2
		5–20	Sandy clay loam	SC or CL	A–6
		20–50	Sandy clay loam	CL or SC	A–6, A–7
		50–66	Sandy clay	SC or CL	A–6, A–7
Chipley: Cy	20 to 40 inches for 2 to 3 months each year.	0–72	Fine sand and sand.	SM or SP–SM	A–2, A–3
Cowarts: CqB, CqC	More than 5 feet	0–7	Loamy sand	SM	A–2
		7–24	Sandy clay loam	SC	A–2, A–6
		24–62	Sandy clay loam	SC	A–2, A–4, A–6
Dothan: DaA, DaB	More than 4 feet	0–7	Loamy sand	SM	A–2
		7–10	Sandy loam	SM or SC	A–2
		10–42	Sandy clay loam	SC	A–6
		42–60	Sandy clay loam	SC or CL	A–4, A–6
Dunbar: Dx	15 to 30 inches for 1 to 2 months each year.	0–14	Fine sandy loam	SM	A–2, A–4
		14–19	Clay loam	CL	A–4, A–6
		19–30	Clay	CL	A–6, A–7
		30–58	Sandy clay loam	SC or CL	A–4, A–6
		58–68	Sand	SM	A–2
Esto: EfC	More than 3 feet	0–7	Loamy sand	SM	A–2
		7–54	Sandy clay	CL or MH	A–6, A–7
		54–66	Clay	MH or CL	A–7, A–6
Fuquay: FsB	More than 6 feet	0–24	Loamy sand	SM	A–2
		24–32	Sandy loam	SM or SC	A–2, A–4
		32–60	Sandy clay loam	SC	A–4
		60–72	Sandy clay	CL or SC	A–6
Grady: Grd	Less than 15 inches for more than 6 months each year.	0–9	Fine sandy loam	SM or ML–CL	A–2, A–4
		9–60	Clay	ML–CL or CL	A–6, A–7
Irvington: Ij	20 to 30 inches for 1 to 2 months each year.	0–13	Loamy sand and sandy loam.	SM	A–2
		13–24	Sandy clay loam	SM or SC	A–2, A–4
		24–40	Sandy clay loam	SC or SM	A–6, A–4, A–2
		40–60	Sandy clay loam	SC or CL	A–6, A–2
Kershaw: KdB	More than 9 feet	0–72	Sand	SP or SP–SM	A–3, A–2
Leefield: Ls	15 to 30 inches for 2 to 4 months each year.	0–26	Loamy sand	SM	A–2
		26–31	Sandy loam	SM	A–2
		31–65	Sandy clay loam	SC	A–2, A–6

significant in engineering

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for None of the soils contained material coarser than 3 inches in diameter]

Percentage passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
100	95–100	45–95	15–31	2. 0–6. 3	0. 05–0. 09	4. 5–5. 0	Low.
100	95–100	75–99	30–45	0. 2–0. 6	0. 10–0. 14	4. 5–5. 0	Low.
100	100	50–75	5–20	2. 0–6. 3	0. 03–0. 05	4. 5–5. 5	Low.
100	100	70–80	25–35	0. 63–2. 0	0. 08–0. 12	4. 5–5. 5	Low.
100	100	70–80	36–55	0. 63–2. 0	0. 16–0. 20	4. 5–5. 0	Low.
100	100	70–85	15–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
100	100	85–95	60–80	0. 06–0. 2	0. 14–0. 18	4. 5–5. 0	Moderate to high.
100	100	85–95	50–70	0. 2–0. 63	0. 12–0. 16	4. 5–5. 0	Moderate.
[1] 80–95	[1] 80–95	55–75	20–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
85–95	85–95	75–85	36–55	0. 63–2. 0	0. 12–0. 16	4. 5–5. 0	Low.
85–95	85–95	65–85	40–55	0. 2–0. 63	0. 10–0. 14	4. 5–5. 0	Moderate.
100	100	70–90	40–60	0. 06–0. 2	0. 12–0. 14	4. 5–5. 0	Moderate.
100	85–95	50–75	5–15	6. 3–10. 0	0. 05–0. 07	4. 5–5. 5	Low.
95–100	90–95	60–75	13–20	2. 0–6. 3	0. 06–0. 08	4. 5–5. 0	Low.
95–100	90–95	70–80	30–45	0. 2–0. 63	0. 12–0. 14	4. 5–5. 0	Low.
95–100	90–95	70–85	30–45	0. 06–0. 2	0. 10–0. 12	4. 5–5. 0	Low.
95–100	95–100	70–85	15–25	6. 3–10. 0	0–06–0. 10	4. 5–5. 0	Low.
95–100	95–100	70–85	25–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
95–100	95–100	70–85	36–45	0. 63–2. 0	0. 12–0. 16	4. 5–5. 0	Low.
95–100	95–100	70–85	36–55	0. 2–0. 63	0. 12–0. 16	4. 5–5. 0	Low.
100	100	70–85	25–45	0. 63–2. 0	0. 08–0. 12	4. 5–5. 0	Low.
100	100	85–95	50–55	0. 2–0. 63	0. 10–0. 14	4. 5–5. 0	Moderate.
100	100	85–95	55–80	0. 06–0. 2	0. 12–0. 16	4. 5–5. 0	Moderate.
100	100	70–90	36–55	0. 63–2. 0	0. 10–0. 14	4. 5–5. 0	Moderate.
100	100	50–70	13–17	2. 0–6. 3	0. 03–0. 05	4. 5–5. 0	Low.
100	100	50–75	15–25	2. 0–6. 3	0. 06–0. 08	4. 5–5. 0	Low.
100	100	80–90	60–80	0. 06–0. 2	0. 12–0. 15	4. 5–5. 0	Moderate.
100	100	80–90	60–80	0. 06–0. 2	0. 14–0. 18	4. 5–5. 0	Moderate.
90–100	90–100	70–85	13–25	6. 0–10. 0	0. 06–0. 08	4. 5–5. 0	Low.
90–100	90–100	75–85	25–40	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
90–100	90–100	70–85	36–45	0. 2–2. 0	0. 10–0. 14	4. 5–5. 0	Low.
100	100	75–95	40–60	0. 06–0. 2	0. 12–0. 16	4. 5–5. 0	Moderate.
100	90–100	85–95	30–55	0. 2–0. 63	0. 10–0. 12	4. 5–5. 0	Low.
100	100	90–99	60–80	0. 05–0. 2	0. 14–0. 18	4. 5–5. 0	Moderate.
[1] 90–100	[1] 90–100	75–85	15–30	2. 0–6. 3	0. 08–0. 10	4. 5–5. 0	Low.
85–100	80–95	75–85	30–40	0. 63–2. 0	0. 10–0. 14	4. 5–5. 0	Low.
75–95	75–95	70–95	30–40	0. 06–0. 2	0. 09–0. 13	4. 5–5. 0	Low.
90–100	85–100	70–95	30–55	0. 2–0. 63	0. 10–0. 12	4. 5–5. 0	Low.
100	100	60–80	4–12	>20	0. 03–0. 05	5. 1–5. 5	Low.
100	95–100	65–95	15–25	6. 3–8. 0	0. 06–0. 08	4. 5–5. 0	Low.
100	90–100	65–85	20–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
100	90–100	65–75	25–40	0. 2–0. 63	0. 12–0. 16	4. 5–5. 0	Low.

TABLE 7.—*Estimates of soil properties*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface (typical profile)	Classification		
			USDA texture	Unified	AASHO
		Inches			
Mascotte: Mn	15 to 30 inches for 2 to 6 months each year.	0–12	Sand	SP–SM	A–3, A–2
		12–24	Loamy sand and sand.	SM or SP–SM	A–2, A–3
		24–36	Sand	SM	A–2
		36–60	Sandy clay loam	SC	A–4
		60–72	Sandy loam	SM	A–2
Ocilla: Oh, On	15 to 30 inches for 2 to 4 months each year.	0–24	Loamy sand	SM	A–2
		24–30	Sandy loam	SM	A–2
		30–66	Sandy clay loam	SC, SM–SC, or CL	A–2, A–6
Olustee: Oa	Less than 15 inches for 1 to 2 months each year.	0–35	Sand	SM or SP–SM	A–2, A–3
		35–60	Sandy clay loam	SC	A–4, A–2
Orangeburg: OeB	More than 5 feet	0–8	Loamy sand	SM	A–2
		8–14	Sandy loam	SM or SC	A–2
		14–72	Sandy clay loam	SC	A–6
*Osier: OP. For Pelham part of OP, see Pelham series.	Less than 15 inches for 3 to 6 months each year.	0–3	Fine sandy loam	SM	A–2
		3–62	Sand	SP–SM	A–2, A–3
Pelham. Mapped only with Osier soils.	Less than 15 inches for 3 to 6 months each year.	0–28	Loamy sand	SM	A–2
		28–62	Sandy clay loam	SC	A–2, A–6
Rains: Ros	Less than 15 inches for more than 6 months each year.	0–12	Fine sandy loam	SM	A–2
		12–66	Sandy clay loam	CL or SC	A–6
Robertsdale: Rl	15 to 30 inches for 2 to 4 months each year.	0–13	Loamy sand	SM	A–2
		13–20	Sandy clay loam	SM	A–2, A–4
		20–42	Sandy clay loam	SC	A–4, A–2
		42–64	Sandy clay loam	SC	A–4
*Stilson: Se, Suc. No estimate for Urban land part of Suc.	30 to 36 inches for 1 to 2 months each year.	0–24	Loamy sand	SM	A–2
		24–30	Sandy loam	SM or SC–SM	A–2
		30–66	Sandy clay loam	SC or CL	A–2, A–6
Sunsweet: ShD2	More than 4 feet	0–4	Sandy loam	SM	A–2
		4–9	Sandy clay loam	SC	A–4
		9–66	Sandy clay	CL	A–6, A–7
*Tifton: TnC, TqA, TqB, TuB2, TuC2. No estimates for Urban land part of TnC.	30 to 60 inches for about 1 month each year.	0–10	Loamy sand	SM	A–2
		10–42	Sandy clay loam	SC or SM–SC	A–2, A–6, A–7
		42–66	Sandy clay loam	SC or SM–SC	A–6, A–7
Urban land. Mapped only with Stilson and Tifton soils; no estimates; material too variable.					

[1] Materials not passing sieve are mainly iron pebbles.

significant in engineering—Continued

Percentage passing sieve— No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Permeability	Available water capacity	Reaction	Shrink-swell potential
				Inches per hour	*Inches per inch of soil*	*pH*	
100	100	70–85	5–12	2. 0–6. 3	0. 04–0. 08	4. 5–5. 0	Low.
100	100	70–85	10–25	2. 0–6. 3	0. 06–0. 10	4. 5–5. 0	Low.
100	100	80–95	13–15	6. 3–10. 0	0. 08–0. 12	4. 5–5. 0	Low.
100	100	80–95	36–45	0. 63–2. 0	0. 12–0. 14	4. 5–5. 0	Low.
100	100	80–95	20–35	0. 63–2. 0	0. 10–0. 12	4. 5–5. 0	Low.
100	100	80–97	15–30	2. 0–6. 3	0. 06–0. 09	4. 5–5. 0	Low.
100	100	85–97	20–35	0. 63–2. 0	0. 08–0. 12	4. 5–5. 0	Low.
100	100	85–97	33–56	0. 63–2. 0	0. 11–0. 13	4. 5–5. 0	Low.
100	100	70–85	5–15	6. 3–10. 0	0. 04–0. 08	4. 5–5. 0	Low.
100	100	70–85	30–45	0. 63–2. 0	0. 10–0. 14	4. 5–5. 0	Low.
100	95–100	80–90	15–25	6. 3–10. 0	0. 06–0. 08	4. 5–5. 5	Low.
100	95–100	80–90	20–35	2. 0–6. 3	0. 10–0. 12	4. 5–5. 5	Low.
100	95–100	85–95	36–50	0. 63–2. 0	0. 12–0. 14	4. 5–5. 5	Low.
100	100	65–80	13–25	6. 3–10. 0	0. 06–0. 10	4. 5–5. 0	Low.
100	100	51–70	5–12	6. 3–20. 0	0. 04–0. 06	4. 5–5. 0	Low.
100	95–100	70–80	15–25	2. 0–6. 3	0. 05–0. 09	4. 5–5. 0	Low.
100	95–100	70–80	25–40	0. 63–2. 0	0. 10–0. 14	4. 5–5. 0	Low.
100	100	60–80	15–25	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
100	100	70–85	36–60	0. 63–2. 0	0. 12–0. 14	4. 5–5. 0	Low.
[1] 85–95	[1] 85–95	70–85	15–30	2. 0–6. 3	0. 06–0. 08	4. 5–5. 5	Low.
85–95	85–95	70–90	20–40	2. 0–6. 3	0. 12–0. 15	4. 5–5. 5	Low.
75–90	75–90	70–90	30–45	0. 2–0. 63	0. 12–0. 14	4. 5–5. 5	Low.
85–95	85–95	70–90	40–50	0. 2–0. 63	0. 12–0. 14	4. 5–5. 5	Low.
95–100	95–100	75–85	15–30	2. 0–6. 3	0. 06–0. 08	4. 5–5. 0	Low.
95–100	95–100	75–85	20–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
95–100	95–100	75–95	30–55	0. 63–2. 0	0. 12–0. 14	4. 5–5. 0	Low.
[1] 70–95	[1] 70–95	45–70	20–35	2. 0–6. 3	0. 08–0. 12	4. 5–5. 0	Low.
70–95	70–95	70–90	36–45	0. 63–2. 0	0. 10–0. 14	4. 5–5. 0	Low.
95–100	95–100	80–95	50–70	0. 2–0. 63	0. 12–0. 14	4. 5–5. 0	Moderate.
[1] 60–95	[1] 50–85	50–70	15–30	6. 3–8. 0	0. 06–0. 09	4. 5–5. 5	Low.
70–95	65–95	55–80	30–40	0. 63–2. 0	0. 12–0. 16	4. 5–5. 5	Low.
95–99	85–95	70–80	36–45	0. 63–2. 0	0. 10–0. 12	4. 5–5. 5	Low.

TABLE 8.—*Engineering*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils for referring to other series that

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Local roads and streets	Farm ponds: Reservoir
Alapaha: Ai	Poor: wetness	Poor: wetness	Seasonal high water table; flooding.	Moderately rapid permeability to a depth of 26 inches.
Albany: Ad	Poor: sandy in upper 56 inches.	Fair: seasonal high water table.	Seasonal high water table.	Moderate permeability; excessive seepage likely.
Bayboro: Bm	Poor: wetness	Poor: wetness	Seasonal high water table; plastic, clayey subsoil.	Features generally favorable.
Carnegie: CoC2, CoD2	Poor in surface layer; fair if mixed with upper part of subsoil.	Fair: moderate shrink-swell potential.	Moderate shrink-swell potential in some layers of subsoil.	Features generally favorable.
Chipley: Cy	Poor: sandy to a depth of about 72 inches.	Good	Seasonal high water table; flooding.	Rapid permeability; excessive seepage likely.
Cowarts: CqB, CqC	Poor in surface layer; fair if mixed with upper part of subsoil.	Good	Features generally favorable.	Features generally favorable.
Dothan: DaA, DaB	Poor in surface layer; good if mixed with upper part of subsoil.	Good	Features generally favorable.	Features generally favorable.
Dunbar: Dx	Fair: about 14 inches of fair material over clay.	Fair to poor: clayey at a depth of 19 inches.	Seasonal high water table; flooding.	Features generally favorable.
Esto: EfC	Poor: clayey below depth of about 7 inches.	Fair: clayey at depth of 7 inches.	Moderate shrink-swell potential in some layers of the subsoil.	Features generally favorable.
Fuquay: FsB	Poor: sandy in upper 24 inches.	Good	Features generally favorable.	Rapid permeability to depth of 24 inches.
Grady: GrD	Poor: wetness	Poor: wetness	Seasonal high water table; flooding.	Sand lenses below subsoil in some areas.

interpretations

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions appear in the first column of this table]

Soil features affecting—Continued						
Farm ponds—Con.	Drainage for crops and pasture	Irrigation	Excavated pits		Terraces and diversions
Embankment			Water supply (aquifer fed)	Water storage (water pumped in)	
Moderate to low permeability if compacted.	Seasonal high water table; flooding.	Rapid intake rate; low to medium available water capacity.	Material unstable to a depth of 26 inches.	Material unstable to a depth of 26 inches.	Slopes of 0 to 3 percent.
Moderate to low permeability if compacted.	Seasonal high water table.	Rapid intake rate; low available water capacity.	Unstable slopes to depth of about 54 inches if excavated.	Moderate permeability; unstable slopes if excavated.	Slopes of 0 to 2 percent.
Moderate to high shrink-swell potential; fair to poor stability.	Seasonal high water table; slow permeability; few suitable outlets.	Moderate intake rate; wet for long periods.	Slow permeability; poor recharge properties.	Features generally favorable.	Slopes of 0 to 2 percent.
Features generally favorable.	Well drained	Slopes	Well drained	Features generally favorable.	Slopes.
Moderate to high permeability if compacted.	Seasonal high water table; flooding.	Rapid intake rate; very low available water capacity.	Unstable slopes; flooding.	Rapid permeability; unstable slopes; flooding.	Slopes of 0 to 2 percent.
Features generally favorable.	Well drained	Features generally favorable.	Well drained	Features generally favorable.	Features generally favorable.
Features generally favorable.	Well drained	Features generally favorable.	Well drained	Features generally favorable.	Features generally favorable.
Moderate shrink-swell potential.	Seasonal high water table; flooding; slow permeability.	Moderate intake rate; slow permeability; flooding.	Slow permeability; poor recharge properties.	Flooding	Slopes of 0 to 2 percent.
Moderate shrink-swell potential; fair to poor stability.	Well drained	Slow permeability; slopes.	Well drained	Features generally favorable.	Features generally favorable.
Features generally favorable.	Well drained	Features generally favorable.	Well drained	Features generally favorable.	Features generally favorable.
Fair to good stability; moderate shrink-swell potential.	Seasonal high water table; slow to very slow permeability; suitable outlets generally not available.	Moderately slow intake rate; wet for long periods.	Slow to very slow permeability; recharge properties variable.	Sand lenses below subsoil; flooding.	Slopes of less than 1 percent.

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TABLE 8.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Local roads and streets	Farm ponds: Reservoir
Irvington: Ij	Poor in surface layer; fair if mixed with upper part of subsoil.	Good to fair: seasonal high water table.	Seasonal high water table.	Features generally favorable.
Kershaw: KdB	Poor: sandy to depth of about 72 inches.	Good	Unstable slopes; subject to gullying.	Very rapid permeability; excessive seepage likely.
Leefield: Ls	Poor: sandy to depth of 6 inches.	Fair: seasonal high water table.	Seasonal high water table.	Rapid to moderately rapid permeability to depth of about 36 inches.
Mascotte: Mn	Poor: wetness; sandy to depth of about 36 inches.	Poor: wetness	Seasonal high water table.	Moderate permeability; excessive seepage likely.
Ocilla:				
Oh	Poor: sandy to depth of about 24 inches.	Fair: seasonal high water table.	Seasonal high water table.	Moderately rapid permeability to depth of about 24 inches.
On	Poor: sandy to depth of about 24 inches.	Fair: seasonal high water table.	Seasonal high water table; flooding.	Moderately rapid permeability to depth of about 24 inches; flooding.
Olustee: Oa	Poor: sandy to depth of about 35 inches.	Fair: wetness	Seasonal high water table.	Rapid permeability to depth of about 36 inches; excessive seepage likely.
Orangeburg: OeB	Poor in surface layer; good if mixed with subsoil.	Good	Features generally favorable.	Sand in substratum to depth of about 84 inches.
*Osier: OP. For Pelham part of OP, see Pelham series.	Poor: wetness	Poor: wetness	Seasonal high water table; flooding.	Rapid permeability; excessive seepage likely.
Pelham. Mapped only with Osier soils.	Poor: wetness	Poor: wetness	Seasonal high water table; flooding.	Moderately rapid permeability to depth of 24 inches; moderate permeability in underlying areas.
Rains: Ros	Poor: wetness	Poor: wetness	Seasonal high water table; flooding.	Variable substratum
Robertsdale: Rl	Poor in surface layer; fair if mixed with upper part of subsoil.	Fair: seasonal high water table.	Seasonal high water table.	Features generally favorable.

interpretations—Continued

Soil features affecting—Continued					
Farm ponds—Con.	Drainage for crops and pasture	Irrigation	Excavated pits		Terraces and diversions
Embankment			Water supply (aquifer fed)	Water storage (water pumped in)	
Features generally favorable.	Fragipan at depth of about 24 inches.	Features generally favorable.	Features generally favorable.	Features generally favorable.	Slopes of 0 to 3 percent.
Moderate to high permeability if compacted.	Excessively drained	Very rapid intake rate; very low available water capacity.	Excessively drained	Rapid permeability; unstable slopes.	Rapid permeability; subject to gullying.
Moderate to low permeability if compacted.	Seasonal high water table.	Rapid intake rate; low to medium available water capacity.	Unstable slopes to depth of about 31 inches.	Unstable slopes to depth of about 31 inches.	Slopes of 0 to 3 percent.
Moderate permeability in upper layers if compacted.	Seasonal high water table; few suitable outlets.	Moderately rapid intake rate; low available water capacity.	Unstable slopes when excavated.	Moderate permeability; unstable slopes when excavated.	Slopes of 0 to 2 percent.
Moderate to low permeability if compacted.	Seasonal high water table; few suitable outlets.	Rapid intake rate; low to medium available water capacity.	Unstable slopes when excavated.	Unstable slopes when excavated.	Slopes of 0 to 3 percent.
Moderate to low permeability if compacted.	Seasonal high water table; few suitable outlets; flooding.	Rapid intake rate; low to medium available water capacity; flooding.	Unstable slopes when excavated.	Unstable slopes when excavated; flooding.	Slopes of 0 to 2 percent.
Moderate to low permeability if compacted.	Seasonal high water table.	Rapid intake rate; low available water capacity.	Unstable slopes when excavated.	Rapid permeability to depth of about 36 inches; unstable slopes when excavated.	Slopes of 0 to 2 percent.
Features generally favorable.	Well drained	Features generally favorable.	Well drained	Sand in substratum to depth of about 84 inches.	Features generally favorable.
Moderate to high permeability if compacted.	Seasonal high water table; flooding.	Low available water capacity; wet for long periods.	Flooding; unstable slopes when excavated.	Flooding; excessive seepage likely.	Slopes of less than 1 percent.
Moderate to low permeability if compacted.	Seasonal high water table; flooding.	Seasonal high water table; low to medium available water capacity.	Material unstable in surface layer to depth of 28 inches when excavated.	Material unstable in in surface layer; flooding.	Slopes of less than 1 percent.
Features generally favorable.	Seasonal high water table; flooding.	Flooding; wet for long periods.	Flooding; recharge properties variable.	Flooding	Slopes of 0 to 2 percent.
Features generally favorable.	Fragipan at depth of 24 to 36 inches.	Moderately rapid intake rate; medium available water capacity.	Features generally favorable.	Features generally favorable.	Slopes of 0 to 3 percent.

TABLE 8.—*Engineering*

Soil series and map symbols	Suitability as source of—		Soil features affecting—	
	Topsoil	Road fill	Local roads and streets	Farm ponds: Reservoir
*Stilson: Se, SuC. No interpretations for Urban land part of SuC.	Poor: sandy to depth of 24 inches.	Good	Features generally favorable.	Moderate permeability; seepage likely.
Sunsweet: ShD2	Poor: clayey material at depth of 9 inches.	Fair: clayey material at depth of 9 inches.	Slopes slightly unstable; some seepage in places.	Features generally favorable.
*Tifton: TnC, TqA, TqB, TuB2, TuC2. No interpretations for Urban land part of TnC.	Poor in surface layer; good if mixed with subsoil.	Good	Features generally favorable.	Moderate permeability.
Urban land. Mapped only with Stilson and Tifton soils; no interpretations; material too variable; onsite investigation needed.				

The test for liquid limit and plastic limit measures the effect of water on the consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Engineering Properties

Table 7 shows estimates of soil properties that are significant in engineering. Estimates were based on test data for those soils tested in the two counties. For the soils not tested, estimates were based on test data obtained from similar soils in other counties and on past experience in engineering construction. No depth to bedrock is shown in table 7. The soils are deep enough over bedrock that bedrock does not affect their use.

Depth to a seasonal high water table is based on field observations. Soils that have a high water table are limited in their use for highways, streets, and other construction.

Permeability, in inches of water percolation per hour, was estimated for the soil in place. Estimates were based on the texture, structure, and porosity of the soil and on field observations.

Available water capacity is the capacity of the soil to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Shrink-swell potential is rated according to the expected volume change of the soil material when its moisture content changes. It is estimated primarily on the basis of the amount and type of clay in the soil. It is rated as *low moderate*, and *high* in table 7. In general, soils classified CH and A–7 have a moderate or high shrink-swell potential. Clean sands and gravels (single grained) and soils that contain a small amount of nonplastic to slightly plastic soil material have a low shrink-swell potential.

Engineering Interpretations

Engineering interpretations of the soils in Colquitt and Cook Counties are shown in table 8. This table rates the suitability of soils as a source of highway construction material. It also lists features that adversely affect the location of highways and the construction of farm ponds, drainage systems, sprinkler irrigation systems, excavated irrigation pits (fig. 16), and terraces and diversions. These interpretations are based on estimates in table 7, on test data in table 6, and on observations of soils in the field.

A rating of *good*, *fair*, or *poor* expresses the suitability of soil material as a source of topsoil and road fill. Topsoil is soil material that is suitable for topdressing slopes, road shoulders, and other earth structures that require a plant cover for protection. The ratings in table 8 are mainly for the upper 2 feet of the soil. The suitability of a soil for road fill depends largely on texture, kind of clay, moisture content, and location to the area of use. Normally wet, plastic clay is rated poor for road fill, and sand is rated good or fair, depending on its location. Sand is difficult to compact; close control of moisture is needed during compaction.

interpretations—Continued

Soil features affecting—Continued					
Farm ponds—Con.	Drainage for crops and pasture	Irrigation	Excavated pits		Terraces and diversions
Embankment			Water supply (aquifer fed)	Water storage (water pumped in)	
Features generally favorable.	Seasonal high water table.	Low to medium available water capacity.	Features generally favorable.	Features generally favorable.	Slopes of 0 to 3 percent.
Moderate shrink-swell potential.	Well drained	Slopes	Moderately slow permeability.	Features generally favorable.	Slopes of 5 to 12 percent; broken relief.
Features generally favorable.	Well drained	Features generally favorable.	Poor recharge properties.	Features generally favorable.	Features generally favorable.

***Figure 16.*—Irrigation pit in Leefield loamy sand used for irrigating tobacco.**

The suitability of the soils as a source of sand is not shown in table 8. The soils classified as sand have poor gradation and contain material that is not suitable for use in concrete structures or as filter material. Some soils, however, are suitable as a source of material that can be used as subbase for pavements. The suitability of the soil as a source of subbase material can be determined by referring to tables 7 and 8.

The selection of local road and street locations is affected by susceptibility to seepage and flooding, a seasonal high water table, depth to bedrock, and other factors that affect construction.

The reservoir areas of farm ponds are adversely affected by rapid permeability, seepage, and flooding. Material that has low strength and stability and high shrink-swell potential is not well suited for use in embankments. The permeability after compaction is also considered.

Soil features that affect drainage for crops and pasture are a seasonal high water table, permeability, susceptibility to flooding, and availability of outlets.

Some of the features considered in evaluating a soil for irrigation purposes are rate of water intake, available water capacity, and productivity of crops.

Excavated pits are pits dug to intercept and use available ground water and also those dug to store water supplied from another source until needed. Permeability, stability of slopes, recharge properties, drainage, and flooding are the main features considered in this evaluation.

Slope, erodibility, productivity of crops, seasonal high water table, and rate of water intake are considered in determining the suitability of a soil for terraces and diversions.

Formation and Classification of the Soils

This section describes the major factors of soil formation and tells how these factors have affected the soils of Colquitt and Cook Counties. It also defines the system of soil classification currently used and classifies the soils of the two counties according to that system.

Formation of Soils

Soil forms through the processes of the environment acting upon soil materials that are deposited or accumulated by geologic agencies. The characteristics of a soil at any given point are determined by (1) the physical and mineral composition of the parent material; (2) the climate under which the soil material has existed since it accumulated; (3) the relief, or lay of the land, which influences drainage; (4) the plants and animals in and on the soil; and (5) the length of time these processes have acted on the soil material (*7*). All of these factors have influenced the formation of each soil in Colquitt and Cook Counties.

The relative importance of each factor differs from place to place. In some areas one factor may be more important in the formation of a soil and determine most of its properties, as is common where the parent material consists of pure quartz sand. Quartz sand is highly resistant to weathering, and soils formed in it generally have faint horizons. Even in quartz sand, however, a distinct profile can form under certain kinds of vegetation if the relief is low and flat and the water table is high. The five factors of soil formation are discussed in the paragraphs that follow.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineral composition of the soils. In Colquitt and Cook Counties, the parent material of most soils is sedimentary and consists of unconsolidated materials deposited by water. The texture of the material ranges from coarse sand to clay.

Kershaw and Chipley soils formed in thick beds of sand. Because the material is mostly quartz sand, highly resistant to weathering, these soils do not have clay-enriched horizons. Tifton, Dothan, Irvington, Cowarts, Stilson, Leefield, and Alapaha soils are examples of soils formed in beds of loamy material. All have well-defined, clay-enriched horizons that contain plinthite.

Esto and Sunsweet soils, on uplands, formed in beds of clayey material. They have a clayey subsoil that restricts the movement of water and air.

Dunbar and Rains soils formed on stream terraces mainly in clayey material washed from soils of the uplands.

Climate

Climate, as a factor of soil formation, affects the physical, chemical, and biological relationships in the soil profile, mainly through the influence of precipitation and temperature. The climate in Colquitt and Cook Counties is warm and humid. The average annual temperature is about 65° F., and the average annual rainfall is almost 50 inches per year. Winters are mild, and only occasionally are the soils frozen to a depth of as much as 2 or 3 inches. Because the climate is generally warm and moist, chemical and biological reactions are rapid. The soils are highly leached, strongly weathered, and mainly low in natural fertility. Because climate is uniform throughout the two counties, it has not caused major differences among the soils.

Relief

Relief, or the shape of the landscape, affects soil formation through its influence on drainage, runoff, erosion, temperature, and plant cover.

Relief affects the amount of moisture and air that enters the soil. Water tends to run off the sloping soils faster than it penetrates them; therefore, sloping to steep soils are not so deeply leached as nearly level soils.

Most soils in Colquitt and Cook Counties are nearly level or very gently sloping, but a small acreage is gently sloping and sloping. The elevation ranges from about 170 feet in the southern part of Cook County to about 400 feet in the northwestern part of Colquitt County. Three general types of landscapes are recognized: low flats, broad ridges broken by many intermittent streams and rounded depressions, and gently rolling hills.

The flats occur as large ponded areas, as low areas broken by small ponds, and as areas along streams. The seasonal high water table is near the surface for long periods, and along the streams the soils are flooded each year. Soils that formed in these areas are moderately well drained to very poorly drained and have a gray or mottled subsoil.

The broad ridges are broken by many small streams and some rounded ponds. Where the water table is deep, the soils are well drained and moderately well drained and have a subsoil that is mainly yellowish brown. Along small streams and in depressions, the water table is seasonally at or near the surface, and the soils are somewhat poorly drained to poorly drained and have a gray or mottled subsoil.

The gently rolling hills are adjacent to the larger streams and are dissected by small streams. The water table in these areas is several feet below the surface, and the soils are moderately well drained to excessively drained. Most of the soils have a yellowish-brown to red subsoil, and in places the subsoil is mottled. Sand ridges where the depth to the water table is more than 100 inches are included in this area.

Plants and animals

Plants, micro-organisms, earthworms, insects, and other forms of life that live on and in the soil are active in the soil-forming process. Plants and animals return organic matter to the soils. They transfer plant nutrients and soil material from one horizon to another. Gains and losses in organic nitrogen and plant nutrients and changes in porosity and structure may be the result of the activities of plants and animals. Although the general effects are well known, the specific influence of various species or groups of related species in the formation of any one soil is not known. Animals act on plant remains and convert them into organic matter.

Most soils in Colquitt and Cook Counties contain little organic matter. In wooded areas the soils have a thin cover of leaf mold and a small amount of organic matter in the upper 1 to 3 inches of mineral soil. The dark-gray color in the upper few inches of soil material is caused mainly by stains of organic matter on the sand grains. It does not indicate an appreciable amount of organic matter.

In these two counties, the soils formed under three broad types of vegetation: (1) longleaf pine and scattered hardwoods and an understory of wiregrass; (2) cypress-swamp hardwood forest, in which there were scattered pines and an understory of gallberry, other shrubs, and grasses that tolerate water; and (3) scrub oaks and scattered longleaf pine.

The very poorly drained Bayboro soil is an example of a mineral soil that formed under a cypress-swamp hard-

***Figure 17.*—Aquatic plants on Bayboro mucky loam.**

wood forest (fig. 17) of scattered pines and an understory of gallberry and other water-tolerant shrubs and grasses. This soil has a very dark gray or black surface layer significantly high in organic-matter content.

The native vegetation on the well-drained soils consisted mainly of longleaf pine mixed with some hardwoods and an understory of wiregrass. This kind of vegetation slowed down runoff, but contributed little organic matter.

The excessively drained Kershaw soil is an example of a soil that formed under a canopy of scrub oak and scattered longleaf pine. Only the upper 1 or 2 inches is stained slightly with organic matter.

Man has changed the direction and rate of development of soils by clearing the forests, cultivating the soils, and introducing new kinds of plants. Few results of these activities can be seen, but studies show that the supply of organic matter in soils is sharply reduced after fields are cultivated for a few years. In some sloping areas under cultivation, the original surface layer is lost through accelerated erosion. Although some results probably are not evident for many centuries, the complex of living organisms that affect the formation of soils in Colquitt and Cook Counties has been drastically changed as a result of man's activity.

Time

The length of time required for the formation of a well-defined profile depends largely on other factors of soil formation. Generally, less time is required if the climate is warm and humid, the parent material is loamy in texture, and the vegetation is luxuriant.

The Osier soils, which formed in local alluvium, are examples of young soils that have indistinct horizons. Except for the darkening of the surface layer by accumulated organic matter, this soil retains most of the characteristics of the parent material. The Kershaw soils, which formed in the parent material high in quartz sand, probably will never have well-expressed horizons.

The Esto and Sunsweet soils have been in place long enough for the formation of a well-defined profile, but their profile is not so well defined as that of some other soils in the two counties. Formation is somewhat retarded by slowly and moderately slowly permeable parent material and little movement of water through the soil.

The Tifton and Dothan soils, which formed in finer textured material than Kershaw soils, have a well-defined profile. They have been in place a long time. Their subsoil is moderately permeable, and they have an acid B horizon that has an accumulation of clay. They bear little resemblance to the original parent material.

Classification of Soils

The purpose of soil classification is to help us remember the significant characteristics of soils, assemble our knowledge about the soils, see their relationships to one another and to the whole environment, and develop principles that relate to their behavior and their response to manipulation. First through classification and then through the use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

The current system of soil classification (*5*, *8*) was adopted by the National Cooperative Soil Survey in 1965. It is a comprehensive system, designed to accommodate all soils, and is under continual study.[9] In this system classes of soils are defined in terms of observable or measurable properties. The properties chosen are primarily those that result in the grouping of soils of similar genesis, or mode of origin. Genesis does not, however, appear in the definitions of the classes.

The current system of classification has six categories. Beginning with the most inclusive, the categories are the order, the suborder, the great group, the subgroup, the family, and the series. Table 9 shows the classification of the soils of Colquitt and Cook Counties according to this system. Brief descriptions of the six categories follow.

Order.—Ten soil orders are recognized: Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate orders are those that tend to give broad climatic groupings of soils. Two exceptions to this generalization are the Entisols and the Histosols, both of which occur in many different climates. Three of the ten orders are represented in Colquitt and Cook Counties: Entisols, Spodosols, and Ultisols.

Suborder.—Each order is divided into suborders, mainly on the basis of soil characteristics that result in grouping soils according to genetic similarity. The climatic range is narrower than that of the order. The properties used are mainly those that reflect either the presence or absence of waterlogging or differences in climate or vegetation.

Great group.—Each suborder is divided into great groups on the basis of similarity in the kind and sequence of the major horizons and in major soil properties. The horizons considered are those in which clay, iron, or humus has accumulated and those in which pans that interfere with the growth of roots and the movement of water have formed. The properties are soil temperature, chemical composition (mainly content of calcium, magnesium, sodium, and potassium), and the like.

Subgroup.—Each great group is divided into subgroups, one that represents the central (typic) concept of the group, and others, called intergrades, that have one or more properties of another great group, suborder, or order.

Family.—Families are established within each subgroup, mainly on the basis of properties important to the growth of plants or properties significant in engineering. Texture, mineral composition reaction, soil temperature, permeability, thickness of horizons, and consistence are among the properties considered.

Series.—A series is a group of soils that have horizons similar in all important characteristics, except for texture of the surface layer, and similar in arrangement in the profile. (See the section "How This Survey Was Made.")

General Nature of the Counties

This section tells about the organization, settlement, and population of Colquitt and Cook Counties. It also briefly describes the farming; the geology, physiography, and drainage; the water supply; and the climate.

[9] See the unpublished working document SELECTED CHAPTERS FROM THE UNEDITED TEXT OF THE SOIL TAXONOMY available in the SCS State Office, Athens, Georgia.

TABLE 9.—*Soil series classified according to the current system of classification*

Series	Family	Subgroup	Order
Alapaha	Loamy, siliceous, thermic	Arenic Plinthic Paleaquults	Ultisols.
Albany	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Bayboro [1]	Clayey, mixed, thermic (kaolinitic)	Umbric Paleaquults	Ultisols.
Carnegie	Fine-loamy, siliceous, thermic	Fragic Paleudults	Ultisols.
Chipley	Thermic, coated	Aquic Quartzipsamments	Entisols.
Cowarts	Fine-loamy, siliceous, thermic	Fragic Paleudults	Ultisols.
Dothan	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Dunbar	Clayey, kaolinitic, thermic	Aeric Paleaquults	Ultisols.
Esto	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Fuquay [2]	Loamy, siliceous, thermic	Arenic Plinthic Paleudults	Ultisols.
Grady	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Irvington	Fine-loamy, siliceous, thermic	Plinthic Fragiudults	Ultisols.
Kershaw [3]	Siliceous, thermic, uncoated	Typic Quartzipsamments	Entisols.
Leefield	Loamy, siliceous, thermic	Arenic Plinthaquic Paleudults	Ultisols.
Mascotte	Sandy over loamy, siliceous, thermic	Ultic Haplaquods	Spodosols.
Ocilla	Loamy, siliceous, thermic	Aquic Arenic Paleudults	Ultisols.
Olustee	Sandy over loamy, siliceous, thermic	Ultic Haplaquods	Spodosols.
Orangeburg	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Osier	Siliceous, thermic	Typic Psammaquents	Entisols.
Pelham	Loamy, siliceous, thermic	Arenic Paleaquults	Ultisols.
Rains	Fine-loamy, siliceous, thermic	Typic Paleaquults	Ultisols.
Robertsdale [4]	Fine-loamy, siliceous, thermic	Plinthaquic Fragiudults	Ultisols.
Stilson	Loamy, siliceous, thermic	Arenic Plintic Paleudults	Ultisols.
Sunsweet	Clayey, kaolinitic, thermic	Plinthic Paleudults	Ultisols.
Tifton	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.

[1] These soils are taxadjuncts to the Bayboro series. They have a histic epipedon and are therefore outside the range defined for the series.
[2] Some of these soils are taxadjuncts to the Fuquay series because plinthite is slightly less than 45 inches below the soil surface.
[3] Some of these soils are taxadjuncts to the Kershaw series. They have a reddish (2.5YR) C horizon and are therefore outside the range defined for the series.
[4] Some of these soils are taxadjuncts to the Robertsdale series because they have a Bltcn horizon that is slightly less than 18 percent clay. They are therefore outside the range defined for the series.

Organization, Settlement, and Population

Colquitt County was organized in 1856 from land that was originally Irwin County and later Thomas and Lowndes Counties (*3*). It was named in honor of William T. Colquitt, a U.S. Senator from Georgia. Moultrie, the county seat, was established in 1859.

Cook County was organized in 1918 from parts of Berrien and Lowndes Counties. It was named after General Phillip Cook, a Confederate soldier and Georgia statesman. Adel, the county seat, was incorporated as a city in 1919.

Creek Indians originally occupied the area of the two counties. The first permanent settlers established homes in this area during the early part of the 19th century.

In 1970 the population of Colquitt County was 32,298, and that of Cook County was 12,129. About 55 percent of the population is rural.

Colquitt and Cook Counties have been mainly agricultural, but industry is gaining in importance. The main industries are metal products, lumber, fertilizer, meatpacking, and shirts for men and boys.

The area surveyed has excellent transportation that provides access to both local and out-of-State markets. Interstate Highway 75 extends throughout Cook County in a north-south direction, parallel to U.S. Highway 41. U.S. Highway 319 and Georgia Highways 33, 37, 133, and 202 pass through Colquitt County. Daily railroad freight service is available from Adel to Atlanta, Savannah, and Valdosta. Moultrie and Adel are important tobacco markets, and Moultrie also has a large produce market and three livestock markets.

Farming

According to the 1969 U.S. Census of Agriculture, 276,166 acres, or 76.7 percent of Colquitt County, was in farms. Cook County had 103,297 acres, or nearly 70 percent of the county, in farms. This is one of the important farming areas in the State. Large acreages of corn, peanuts, cotton, tobacco, soybeans, and hay crops are grown, and the yields are excellent.

Farming is varied. In both counties the number of farms has decreased, but the average size has increased. The Census of Agriculture shows that in 1959, Colquitt County had 1,787 farms and the average size was 160.8 acres. In 1964, the number of farms had decreased to 1,511 and the average size had increased to 184.2 acres. In 1969, the number had decreased to 1,239 and the average size had increased to 222.8 acres. In 1959, Cook County had 814 farms and the average size was 150.8 acres. In 1964, the number of farms had decreased to 609 and the average size had increased to 197 acres. In 1969, the number had decreased to 517 and the average size had increased to 199.8 acres.

Corn, peanuts, tobacco, cotton, and hay were the principal crops grown in 1964. The number of acres of improved pasture of Coastal bermudagrass and bahiagrass has increased considerably. Livestock are cattle, hogs, and poultry, all of which have increased in number.

Many of the soils are well suited to sprinkler irrigation. The area under irrigation increased from 1,907 acres in 1959 to 7,880 acres in 1964 and to 13,727 acres in 1969. Most of the irrigated acreage is used for tobacco.

Geology, Physiography, and Drainage

Colquitt and Cook Counties are in the south-central part of Georgia, in the second tier of counties north of the Florida border.

The two counties are entirely within the Southern Coastal Plain Major Land Resource Area. The soils are nearly level to sloping and are dissected by numerous shallow intermittent streams. The steeper, more broken topography is in the western and northeastern parts of Colquitt County. The soils were derived mainly from material of the Hawthorn Formation, a geologic sedimentary deposit laid down in Miocene times (*4*).

The physiographic divisions are nearly level to gently rolling, well-drained uplands; nearly level, poorly drained plateaus; and poorly drained to very poorly drained, low-lying plains. The highest point in the two counties is 400 feet above sea level, and the lowest is about 170 feet. Cook County has an extensive acreage of large depressions, locally termed bays and ponds, namely, No Mans Friend Pond, Giddens Pond, Heart Pine Bay, Big Pond, and Cecil Bay. Scattered smaller ponded areas occur throughout the central and southern parts of the county. Although the water table fluctuates considerably with seasonal conditions, drainage is consistently poor or very poor in these areas. Colquitt County has more sloping terrain and fewer ponded areas.

The alluvial and undifferentiated terrace deposits are of recent origin and are on the flood plains and low terraces of the major streams in the two counties. The Little, New, Ochlockonee, and Withlacoochee Rivers and their tributaries drain the survey area. The uplands are dissected by many small intermittent streams and creeks. Most of the depressions, such as No Mans Friend Pond and the smaller depressions, have no natural outlets. The poorest drainage in the survey area is associated with the alluvial flood plains and undifferentiated terrace deposits along the major streams and in the large and small oval depressions. Excessively drained areas are on ridges on the east side of and parallel to Little River and east of Warrior Creek in the north-central part of Colquitt County.

Water Supply

The Little, Ochlockonee, New, and Withlacoochee Rivers and Bridge, Ty Ty, Warrior, Indian, Bear, Brushy, Hutchinson Mill, Wells Mill, and Morrison Creeks and smaller intermittent streams provide water for farms, cities, and industry in the two counties. Wells provide drinking water throughout the survey area. Deep wells furnish water for Moultrie, Adel, Sparks, and the other towns in the two counties.

Numerous farm ponds, lakes, and pits provide additional water for livestock, fishing, and irrigation. Suitable sites are available for many additional ponds.

Climate [10]

Colquitt and Cook Counties are in the south-central part of Georgia, about 80 miles north of the Gulf of Mexico and 140 miles west of the Atlantic. The terrain is slightly rolling, and elevations range from 400 feet in the northwestern part of Colquitt County to 170 feet in the southern part of Cook County. The primary climatic control is the latitude, and the warm waters of the Gulf have a strong influence.

[10] By HORACE S. CARTER, State climatologist, National Weather Service, U.S. Department of Commerce; University of Georgia, College of Agriculture, Athens, Georgia.

TABLE 10.—*Temperature and precipitation data*

[Weather stations at Moultrie and Adel. Period of record, 30 years through 1969]

Month	Temperature				Precipitation		
	Average daily maximum	Average daily minimum	2 years in 10 will have at least 4 days with—		Average	1 year in 10 will have—	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—
	°F	*°F*	*°F*	*°F*	*Inches*	*Inches*	*Inches*
January	63. 7	40. 7	78	25	3. 65	1. 2	6. 6
February	66. 3	42. 9	80	27	4. 18	1. 4	8. 1
March	72. 1	48. 1	84	33	5. 25	1. 6	9. 7
April	80. 3	55. 3	88	43	4. 19	1. 4	9. 0
May	86. 9	62. 1	95	52	3. 80	1. 2	6. 2
June	91. 2	68. 2	98	61	4. 77	1. 2	8. 1
July	91. 9	70. 1	98	65	6. 20	2. 6	10. 3
August	92. 1	69. 8	98	64	4. 92	2. 8	7. 4
September	87. 7	66. 1	95	58	4. 21	0. 9	7. 7
October	80. 9	56. 3	89	40	2. 33	0. 3	6. 2
November	71. 9	46. 7	84	31	2. 32	0. 5	5. 4
December	65. 2	40. 9	79	26	4. 02	0. 9	7. 8
Year	79. 2	55. 6	[1] 100	[1] 22	49. 84	38. 0	65. 2

[1] The extreme temperature that will be equalled or exceeded on at least 4 days in 2 years out of 10.

TABLE 11.—*Probabilities of last freezing temperatures in spring and first in fall*

[Data from Moultrie and Adel]

Probability	Dates for given probability at temperatures of—		
	24° F. or lower	28° F. or lower	32° F. or lower
Spring:			
1 year in 10 later than	March 3	March 10	March 28
2 years in 10 later than	February 23	March 5	March 21
5 years in 10 later than	January 21	February 11	March 6
Fall:			
1 year in 10 earlier than	November 17	November 14	October 31
2 years in 10 earlier than	November 26	November 17	November 4
5 years in 10 earlier than	December 16	December 2	November 20

Summers are hot, humid, and long. Most days from mid-May to mid-September have a maximum temperature of 90° F., or above, and more than half the years have at least 1 day of 100° weather. Summer minimum temperatures are usually in the high 60's and low 70's. The highest temperature recorded in the survey area was 105° in July 1942.

Winters are usually mild. The maximum temperature averages about 65° during winter, and afternoon readings in the mid-70's are not unusual. A minimum temperature of freezing, or below, occurs on only 20 to 25 days during an average winter. An occasional strong outbreak of cold air drops the minimum temperature below 20° for 1 or 2 days. The lowest recorded temperature was 8° in December 1962. The freeze-free growing season typically is about 260 days. It extends from early in March to after the middle of November.

Spring is short, and warmup is rapid after April 1. The transition is more gradual in fall, when long periods of pleasant weather, mild sunny days, and cool nights are common. Fall has less rain and wind than spring and fewer periods of unsettled weather.

The average annual rainfall is almost 50 inches. Yearly totals at Moultrie have ranged from 24.52 inches in 1954 to 73.45 inches in 1964, but have been between 40 and 55 inches during more than half the years. July, which has an average rainfall of just more than 6 inches, is normally the wettest month. October and November, which have less than 2½ inches of rain, are the driest. Since most warm-season rain results from local convective showers, the amount of precipitation varies. Showers occur more frequently in the afternoon and are generally of short duration, but can be intense. They frequently cause an erosion hazard early in summer, when plant cover is sparse. Most of the rainfall in spring and winter comes from frontal storms and associated low-pressure centers. Showers are usually more prolonged, and amounts are more uniform over the area.

Thunderstorms occur on about 60 days per year. They are most frequent late in spring and in summer. Winds accompany some of the more severe thunderstorms. Tornadoes have occurred on several occasions.

Relative humidity is high. The monthly average ranges from 80 to 90 percent in early morning and from 50 to 60 percent in early afternoon. Averages are usually higher in summer and lower in spring. Average windspeed ranges from about 10 miles per hour early in spring to 6 miles per hour late in summer.

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Glossary

Acidity, soil. See Reaction, soil.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Coastal plain. A geologic area or soil province extending along the coast. It was once covered by the ocean.

Complex, soil. A mapping unit consisting of different kinds of soils that occur in such small individual areas or in such an intricate pattern that they cannot be shown separately on a publishable soil map.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Droughtiness. The inability of soil to hold water for any length of time.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors, such as light, moisture, temperature, and the physical condition of the soil, are favorable.

First bottom. The normal flood plain of a stream subject to frequent or occasional flooding.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gall spots. Small areas that are bare of vegetation because erosion has removed the soil material.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Gradation. The range of soil particle size. Well-graded soils have a wide range of particle sizes. Poorly graded soils have the same or nearly the same size particles.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rains. The distinction between gully and rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by normal tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. V-shaped gullies result if the material is more difficult to erode with depth; whereas U-shaped gullies result if the lower material is more easily eroded than that above it.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Infiltration. The downward entry of water into the intermediate surface of the soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Inherent erodibility. A soil is naturally erodible.

Leaching. The removal of soluble materials from soils or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state. In engineering, a high liquid limit indicates that the soil has a high content of clay and a low capacity for supporting loads.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along with the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Natural soil drainage. Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Organic matter. A general term for plant and animal material, in or on the soil, in all stages of decomposition. Readily decomposed organic matter is often distinguished from the more stable forms that are past the stage of rapid decomposition.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Percolation. The downward movement of water through the soil.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Phase, soil. A subdivision of a soil, series, or other unit in the soil classification system made because of differences in the soil that affect its management but do not affect its classification in the natural landscape. A soil series, for example, may be divided into phases because of differences in slope, stoniness, thickness, or some other characteristic that affects its management but not its behavior in the natural landscape.

pH value. A numerical means for designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly shows as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to hardpan or to irregular aggregates upon repeated wetting and drying, or it is the hardened relicts of the soft, red mottles. It is a form of laterite.

Poorly graded. A soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles in poorly graded soil material, density can be increased only slightly by compaction.

Presumptive bearing capacity. The estimated capacity of a soil to support loads.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resutling from accelerated erosion. A rill normally is a few inches in depth and width and is not large enough to be an obstacle to farm machinery.

Root zone. The part of the soil that is penetrated, or can be penetrated, by plant roots.

Runoff (hydraulics). The part of the precipitation upon a drainage area that is discharged from the area in stream channels. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Shrink-swell potential (engineering). Amount that a soil will expand when wet or contract when dry. Indicates kinds of clay in soil.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Site index. A numerical means of expressing the quality of a forest site that is based on the height of the dominant stand at an arbitrarily chosen age; for example, the average height attained by dominant and condominant trees in a fully stocked stand at the age of 50 years.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles, less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter). The separates recognized by the International Society of Soil Science are as follows: I (2.0 to 0.2 millimeter); II (0.2 to 0.02 millimeter); III (0.02 to 0.002 millimeter); IV (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically, the part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it may soak into the soil or flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable

state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Understory. The part of a forest that is below the upper crown canopy. Contrasts with overstory.

Upland (geology). Land consisting of material unworked by water in recent geologic time and lying, in general, at a higher elevation than the alluvial plain or stream terrace. Land above the lowlands along rivers.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Well-graded soil. A soil or soil material consisting of particles that are well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which plants (specifically sunflower) wilt so much that they do not recover when placed in a dark, humid atmosphere.

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GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which the mapping unit belongs. Other information is given in tables as follows:

Acreage and extent, table 1, page 6.
Estimated yields, table 2, page 37.
Woodland, table 3, page 39.
Town and country planning, table 5, pages 44 to 47.
Engineering, tables 6, 7, and 8, pages 48 to 59.

Map symbol	Mapping unit	Described on page	Capability unit Symbol	Woodland group Symbol
Ad	Albany sand	8	IIIw-1	3w2
Ai	Alapaha soils	7	Vw-1	2w2
Bm	Bayboro mucky loam	10	Vw-1	2w9
CoC2	Carnegie sandy loam, 5 to 8 percent slopes, eroded	10	IVe-4	2o1
CoD2	Carnegie sandy loam, 8 to 12 percent slopes, eroded	11	VIe-2	2o1
CqB	Cowarts loamy sand, 2 to 5 percent slopes	12	IIe-4	2o1
CqC	Cowarts loamy sand, 5 to 8 percent slopes	13	IVe-4	2o1
Cy	Chipley soils, frequently flooded	12	IVw-3	2w2
DaA	Dothan loamy sand, 0 to 2 percent slopes	14	I-1	2o1
DaB	Dothan loamy sand, 2 to 5 percent slopes	14	IIe-1	2o1
Dx	Dunbar fine sandy loam, frequently flooded	15	IIIw-2	2w8
EfC	Esto complex, 2 to 8 percent slopes	16	VIe-2	3o1
FsB	Fuquay loamy sand, 1 to 4 percent slopes	16	IIs-1	3s2
GrD	Grady soils	18	Vw-1	2w9
Ij	Irvington loamy sand	19	IIw-2	2o7
KdB	Kershaw sand, 0 to 5 percent slopes	20	VIIs-1	5s3
Ls	Leefield loamy sand	22	IIw-2	3w2
Mn	Mascotte sand	23	Vw-4	3w2
Oa	Olustee sand	24	IIIw-1	3w2
OeB	Orangeburg loamy sand, 3 to 6 percent slopes	26	IIe-1	2o1
Oh	Ocilla loamy sand	24	IIIw-1	3w2
On	Ocilla loamy fine sand, frequently flooded	24	IVw-3	3w2
OP	Osier and Pelham soils	26	Vw-2	3w3
Rl	Robertsdale loamy sand	29	IIIw-2	2w8
Ros	Rains fine sandy loam	28	Vw-5	2w3
Se	Stilson loamy sand	29	IIw-2	3s2
ShD2	Sunsweet sandy loam, 5 to 12 percent slopes, eroded	30	VIe-2	3c2
Suc	Stilson-Urban land complex	30	IIw-2	---
TnC	Tifton-Urban land complex, 2 to 8 percent slopes	33	IIIe-2	---
TqA	Tifton loamy sand, 0 to 2 percent slopes	31	I-2	2o1
TqB	Tifton loamy sand, 2 to 5 percent slopes	31	IIe-2	2o1
TuB2	Tifton sandy loam, 2 to 5 percent slopes, eroded	31	IIe-2	2o1
TuC2	Tifton sandy loam, 5 to 8 percent slopes, eroded	32	IIIe-2	2o1

NRCS Accessibility Statement

N

SOIL ASSOCIATIONS

1 — Alapaha-Leefield association: Poorly drained and somewhat poorly drained, nearly level soils on broad flats

2 — Kershaw-Alapaha-Fuquay association: Excessively drained and well-drained, nearly level to very gently sloping soils on ridges; and poorly drained, nearly level soils along drainageways and in low, flat areas

3 — Leefield-Alapaha association: Somewhat poorly drained and poorly drained, nearly level soils on broad flats

4 — Tifton-Alapaha association: Well-drained, nearly level to gently sloping soils on broad upland divides; and poorly drained, nearly level soils in flat, low areas and along drainageways

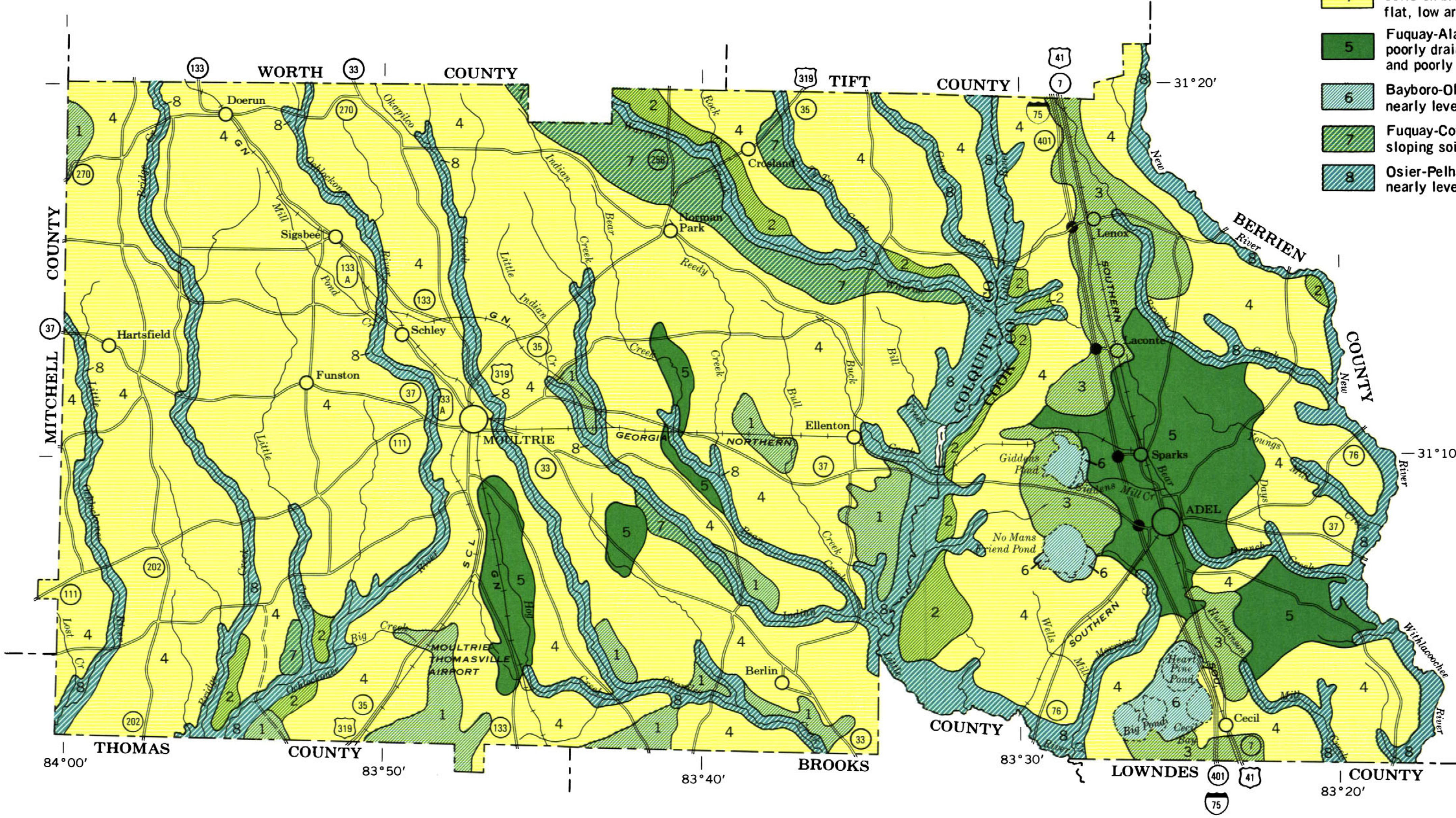
5 — Fuquay-Alapaha-Leefield association: Well-drained and somewhat poorly drained, nearly level to very gently sloping soils on broad ridges; and poorly drained, nearly level soils on broad flats and in depressions

6 — Bayboro-Olustee association: Very poorly drained and poorly drained, nearly level soils in broad depressions

7 — Fuquay-Cowarts association: Well-drained, very gently sloping to gently sloping soils on narrow ridges and knobs

8 — Osier-Pelham association: Very poorly drained and poorly drained, nearly level soils on flood plains

Compiled 1973



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

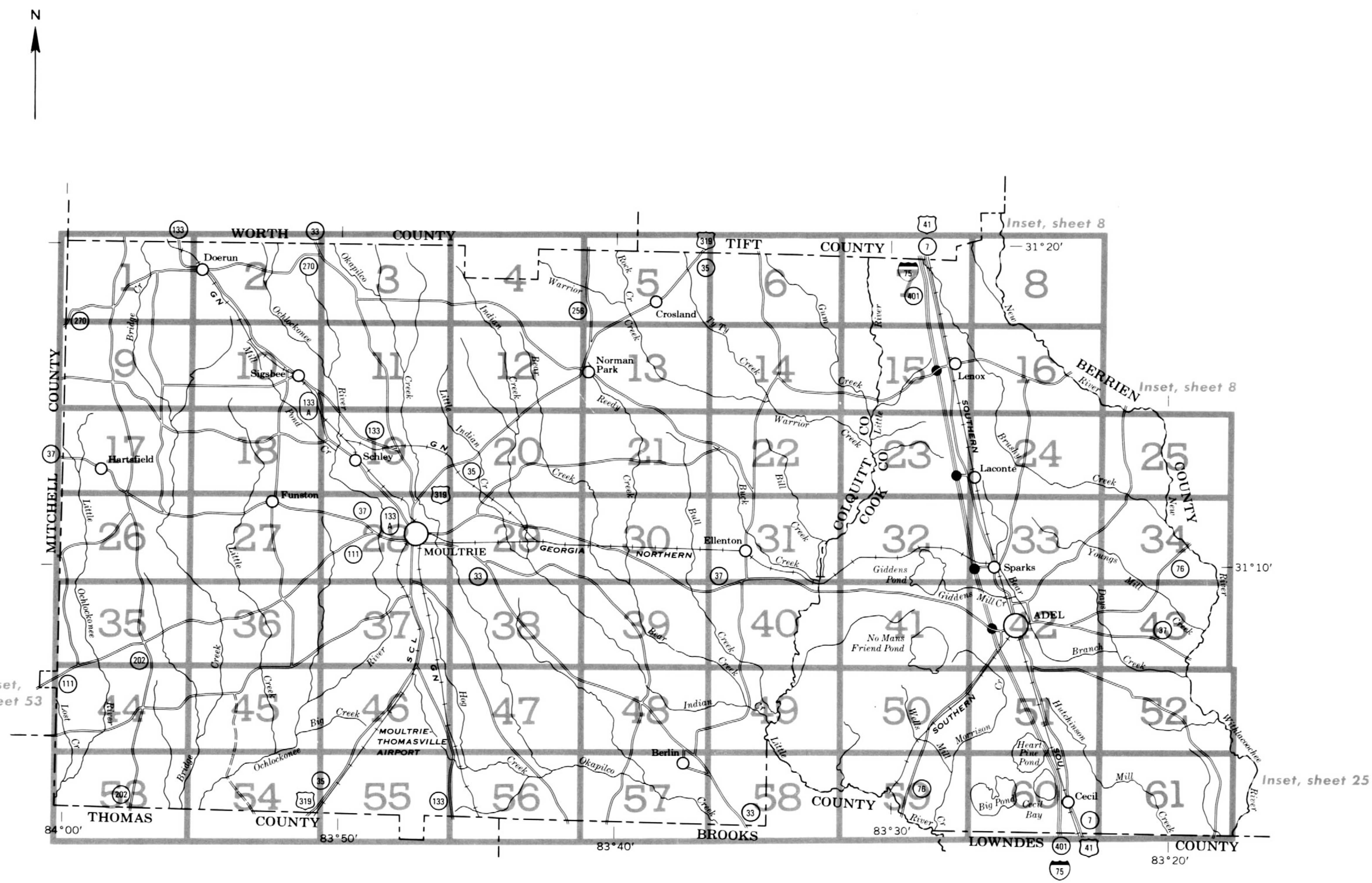
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATIONS

GENERAL SOIL MAP
COLQUITT AND COOK COUNTIES, GEORGIA

Scale 1:253,440

1 0 1 2 3 4 Miles

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



This map is one of a set compiled in 1973 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the University of Georgia, College of Agriculture, Agricultural Experiment Stations. Photobase from 1971 photography. Positions of 5,000-foot grid ticks are approximate and based on the Georgia coordinate system, west zone.

INDEX TO MAP SHEETS

COLQUITT AND COOK COUNTIES, GEORGIA

Scale 1:253,440

1 0 1 2 3 4 Miles

SOIL LEGEND

The first letter in each symbol is the initial one of the soil name. If the third letter is a capital it shows the range of slope, from A, less than 2 percent, to D, up to 12 percent. Symbols without a slope letter are those of nearly level soils. Soils that are named as eroded have a final number, 2, in their symbol.

SYMBOL	NAME
Ad	Albany sand
Ai	Alapaha soils
Bm	Bayboro mucky loam
CoC2	Carnegie sandy loam, 5 to 8 percent slopes, eroded
CoD2	Carnegie sandy loam, 8 to 12 percent slopes, eroded
CqB	Cowarts loamy sand, 2 to 5 percent slopes
CqC	Cowarts loamy sand, 5 to 8 percent slopes
Cy	Chipley soils, frequently flooded
DaA	Dothan loamy sand, 0 to 2 percent slopes
DaB	Dothan loamy sand, 2 to 5 percent slopes
Dx	Dunbar fine sandy loam, frequently flooded
EfC	Esto complex, 2 to 8 percent slopes
FsB	Fuquay loamy sand, 1 to 4 percent slopes
Grd	Grady soils
Ij	Irvington loamy sand
KdB	Kershaw sand, 0 to 5 percent slopes
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Mn	Mascotte sand
Oa	Olustee sand
OeB	Orangeburg loamy sand, 3 to 6 percent slopes
Oh	Ocilla loamy sand
On	Ocilla loamy fine sand, frequently flooded
OP	Osier and Pelham soils
Rl	Robertsdale loamy sand
Ros	Rains fine sandy loam
Se	Stilson loamy sand
ShD2	Sunsweet sandy loam, 5 to 12 percent slopes, eroded
Suc	Stilson-Urban land complex
TnC	Tifton-Urban land complex, 2 to 8 percent slopes
TqA	Tifton loamy sand, 0 to 2 percent slopes
TqB	Tifton loamy sand, 2 to 5 percent slopes
TuB2	Tifton sandy loam, 2 to 5 percent slopes, eroded
TuC2	Tifton sandy loam, 5 to 8 percent slopes, eroded

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Divided ....
- Good motor ....
- Poor motor ....
- Trail ....

Highway markers
- National Interstate ....
- U. S. ....
- State or county ....

Railroads
- Single track ....
- Multiple track ....
- Abandoned ....

Bridges and crossings
- Road ....
- Trail ....
- Railroad ....
- Ferry .... FY
- Ford .... FORD
- Grade ....
- R. R. over ....
- R. R. under ....

Buildings ....
- School ....
- Church ....

Mine and quarry ....

Gravel pit ....

Power line ....

Pipeline ....

Cemetery ....

Dams ....

Levee ....

Tanks ....

Airway beacon ....

Forest fire or lookout station ...

Windmill ....

Located object ....

BOUNDARIES

National or state ....

County ....

Minor civil division ....

Reservation ....

Land grant ....

Small park, cemetery, airport ...

Land survey division corners ...

DRAINAGE

Streams, double-line
- Perennial ....
- Intermittent ....

Streams, single-line
- Perennial ....
- Intermittent
  - Crossable with tillage implements ....
  - Not crossable with tillage implements ....
  - Unclassified ....

Canals and ditches ....

Lakes and ponds
- Perennial .... water w
- Intermittent .... int

Spring ....

Marsh or swamp ....

Wet spot ....

Drainage end or alluvial fan ...

RELIEF

Escarpments
- Bedrock ....
- Other ....

Short steep slope ....

Prominent peak ....

Depressions (Large, Small)
- Crossable with tillage implements ....
- Not crossable with tillage implements ....
- Contains water most of the time ....

SOIL SURVEY DATA

Soil boundary
- and symbol .... Dx

Gravel ....

Stoniness
- Stony ....
- Very stony ....

Rock outcrops ....

Chert fragments ....

Clay spot ....

Sand spot ....

Gumbo or scabby spot ....

Made land ....

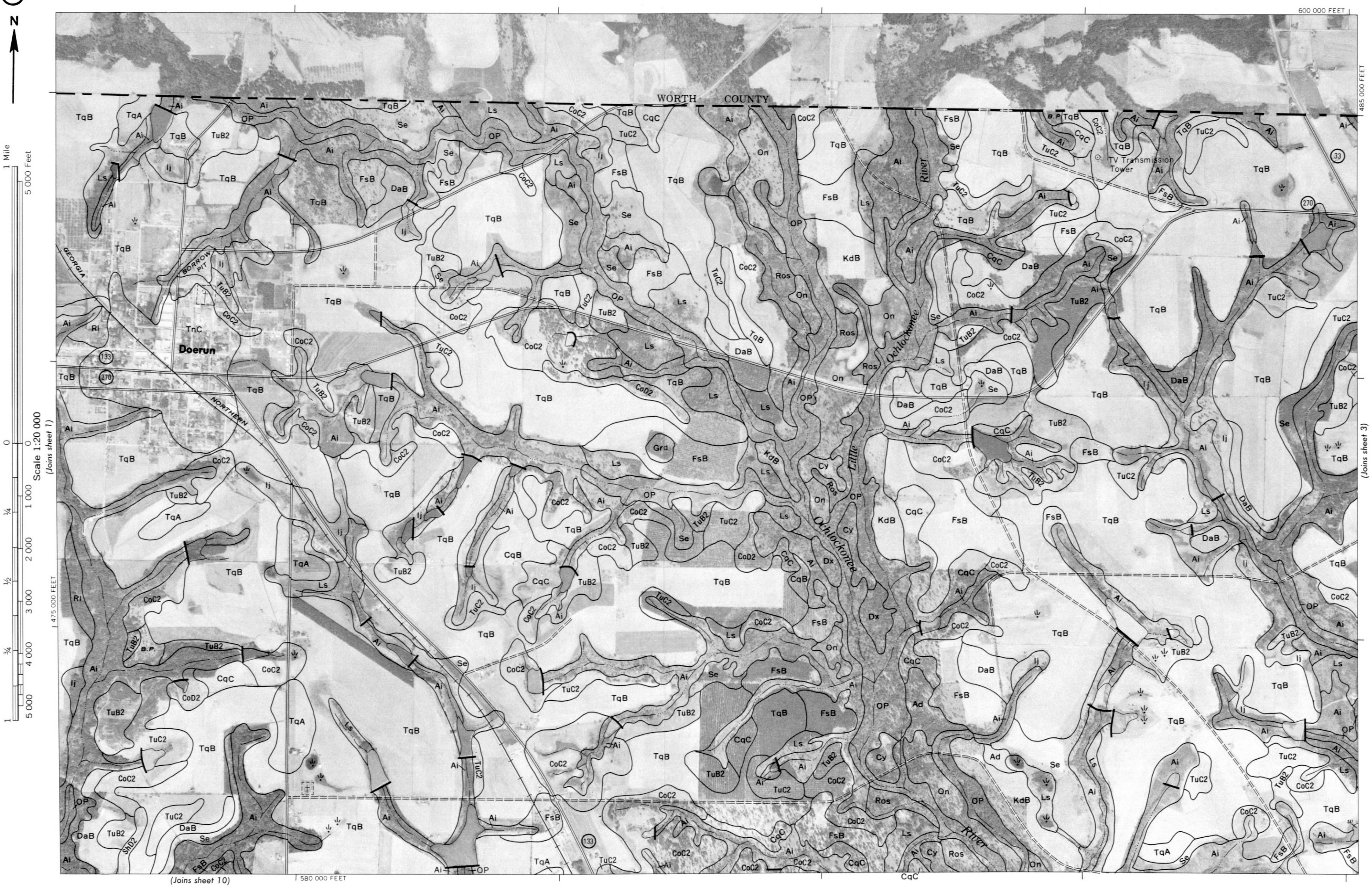
Severely eroded spot ....

Blowout, wind erosion ....

Gully ....

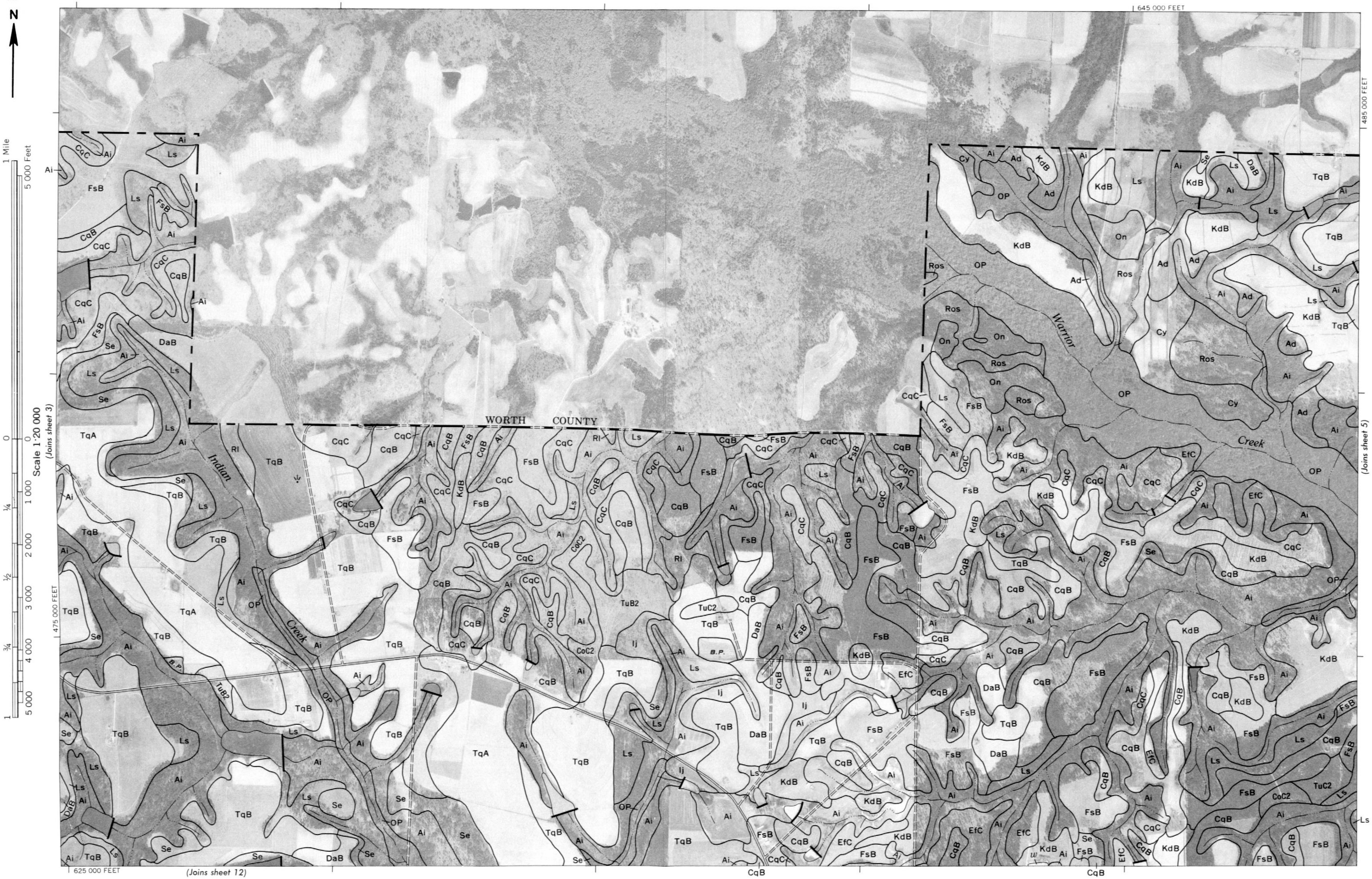
Borrow pit .... B.P.


555 000 FEET
485 000 FEET
WORTH COUNTY
MITCHELL COUNTY
GEORGIA NORTHERN
New Light Church
Bridge Creek
(Joins sheet 2)
(Joins sheet 9)
475 000 FEET
575 000 FEET
N
Scale 1:20 000
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


N
WORTH COUNTY
Doerun
GEORGIA
NORTHERN
BORROW PIT
Little Ochlockonee River
Ochlockonee River
TV Transmission Tower
600 000 FEET
485 000 FEET
475 000 FEET
580 000 FEET
Scale 1:20 000
1 Mile
5 000 Feet
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 10)

COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 3

3


N
1 Mile
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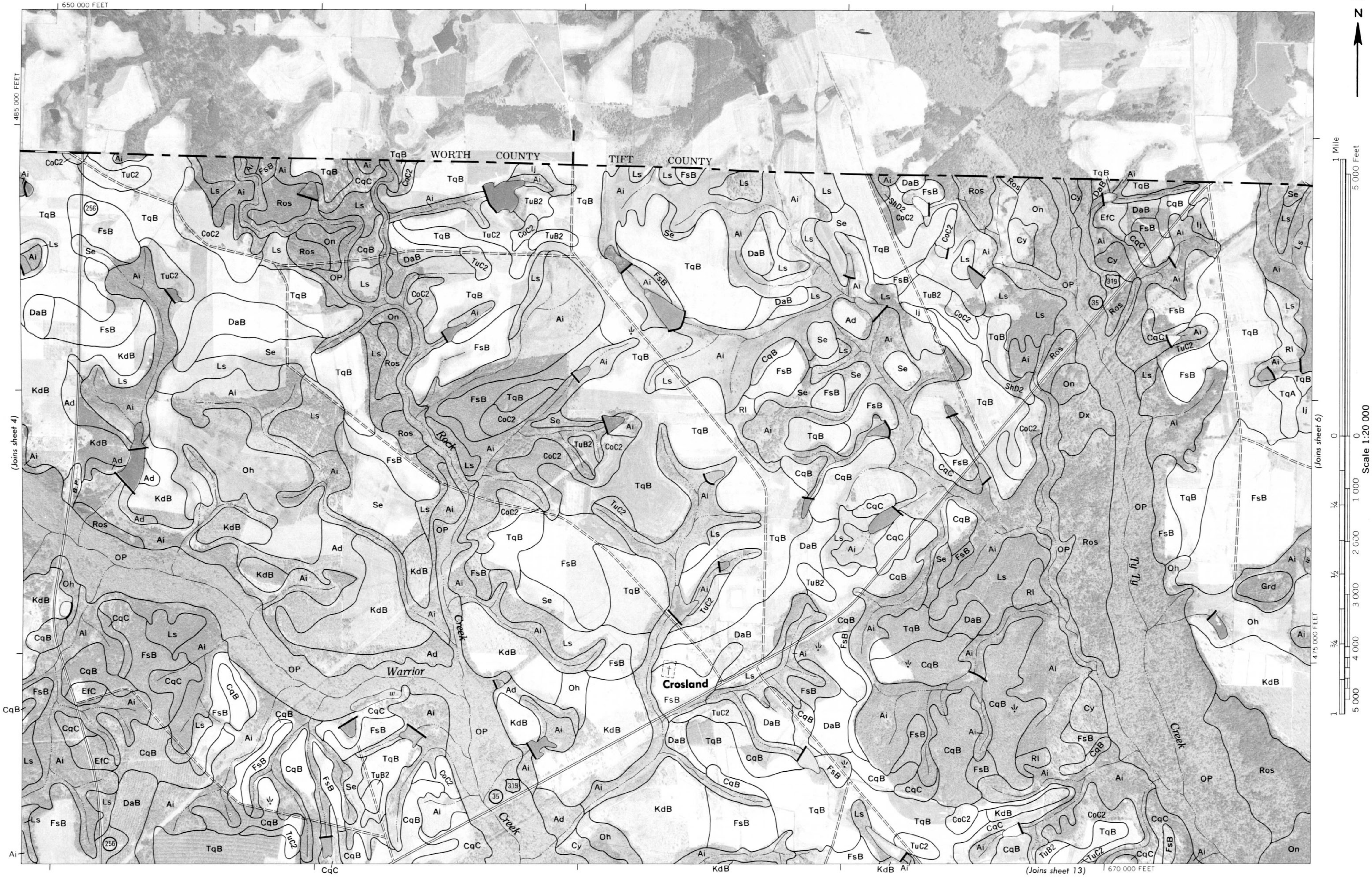
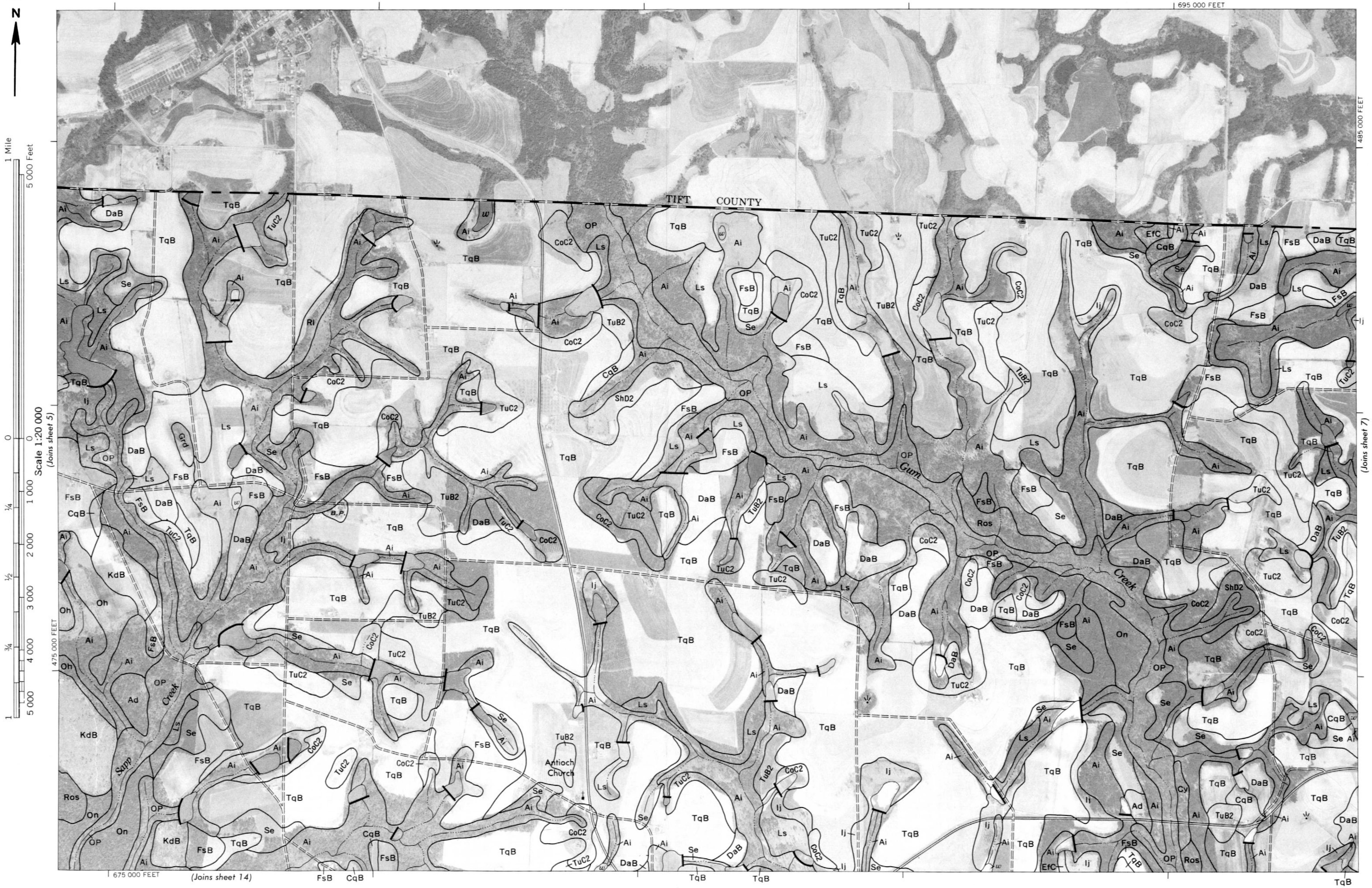
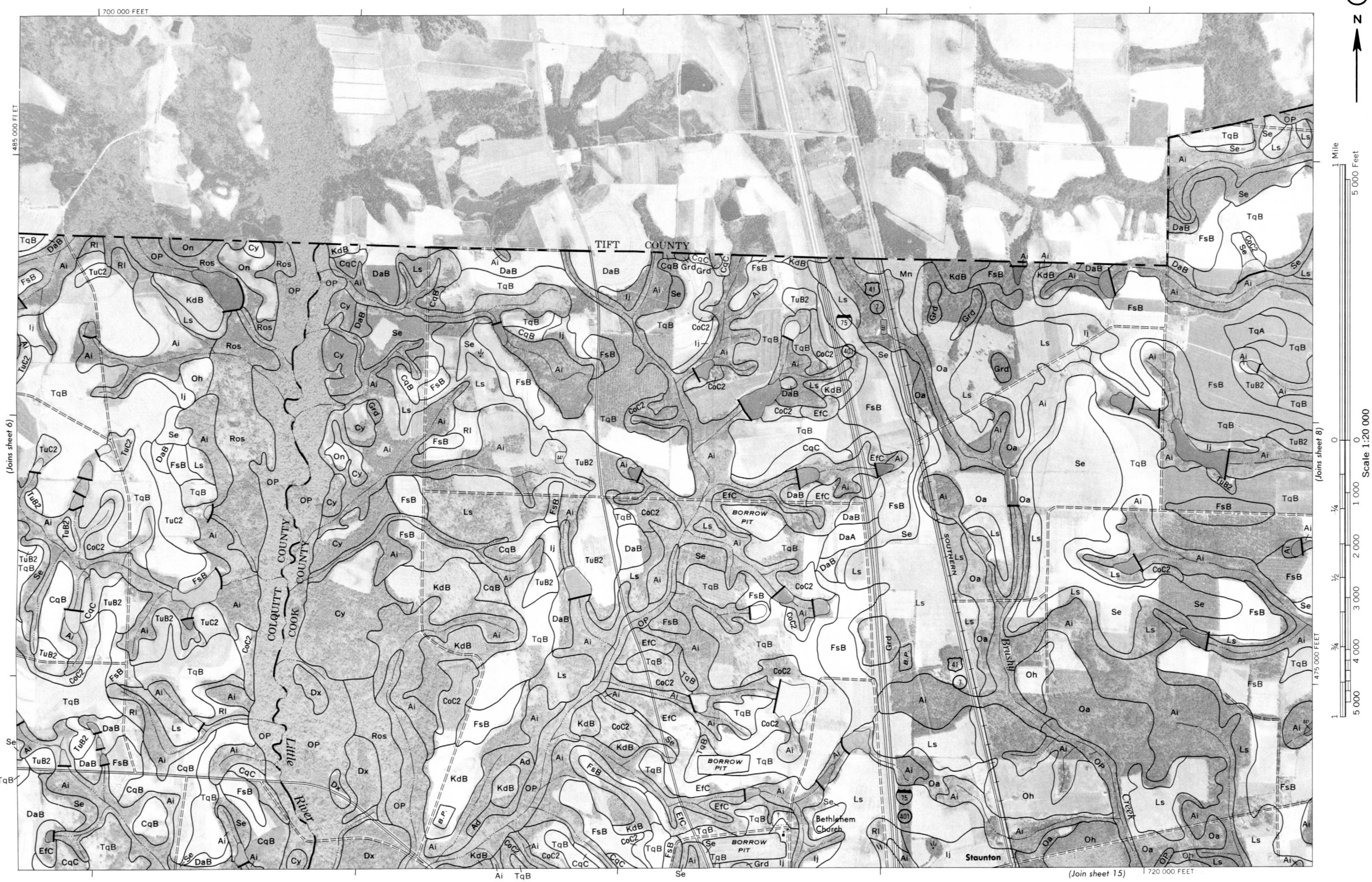
4 000
1
5 000
645 000 FEET
485 000 FEET
475 000 FEET
625 000 FEET
(Joins sheet 3)
(Joins sheet 5)
(Joins sheet 12)
WORTH COUNTY
Indian Creek
Warrior Creek
B.P.

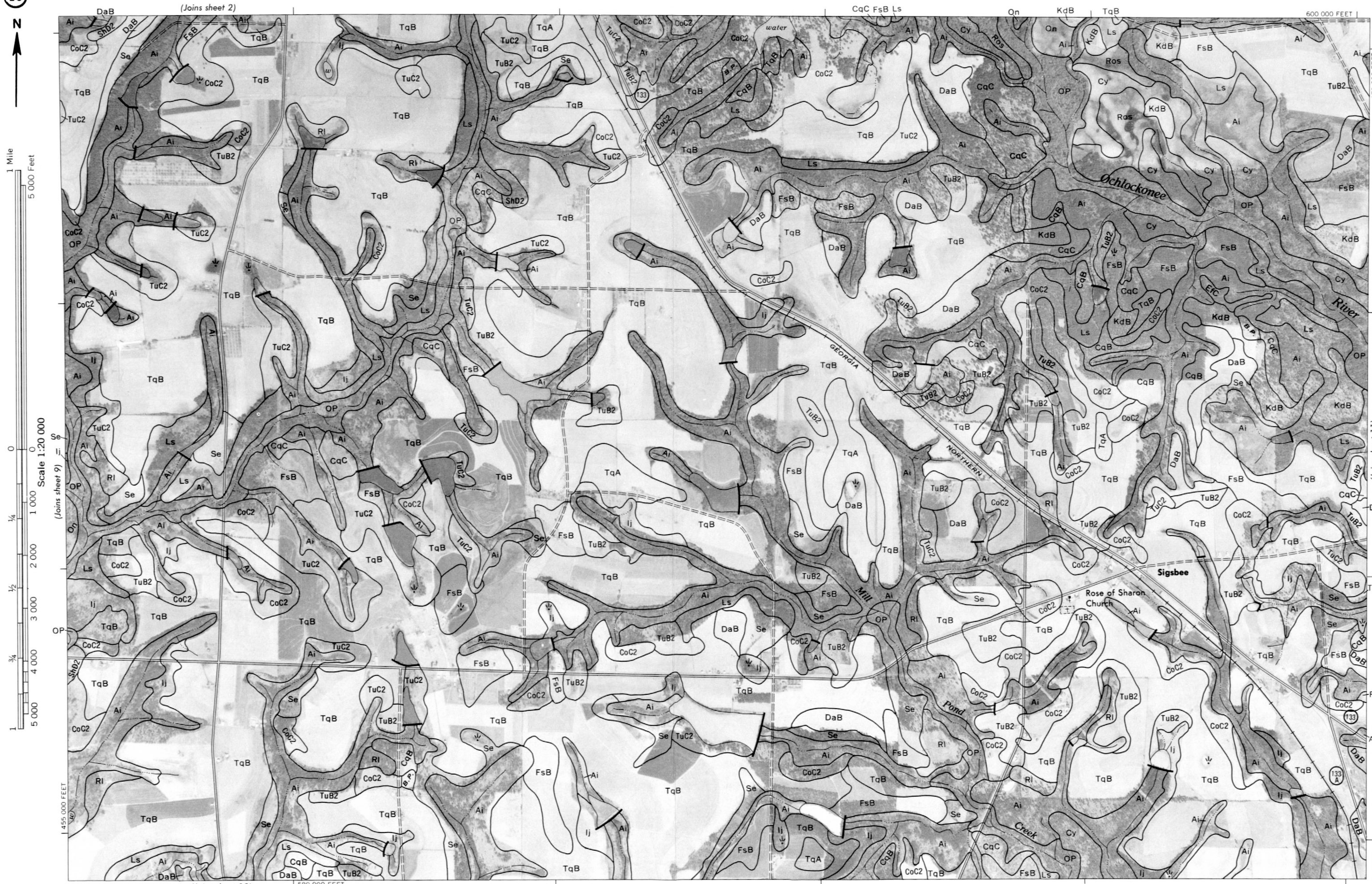

5
N
650 000 FEET
485 000 FEET
WORTH COUNTY
TIFT COUNTY
Rock Creek
Warrior Creek
Ty Ty Creek
Crosland
(Joins sheet 4)
(Joins sheet 6)
(Joins sheet 13)
475 000 FEET
670 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000


N
1 Mile
5 000 Feet
Scale 1:20 000
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 14)
695 000 FEET
485 000 FEET
475 000 FEET
675 000 FEET
TIFT COUNTY
Gum Creek
Sapp Creek
Antioch Church

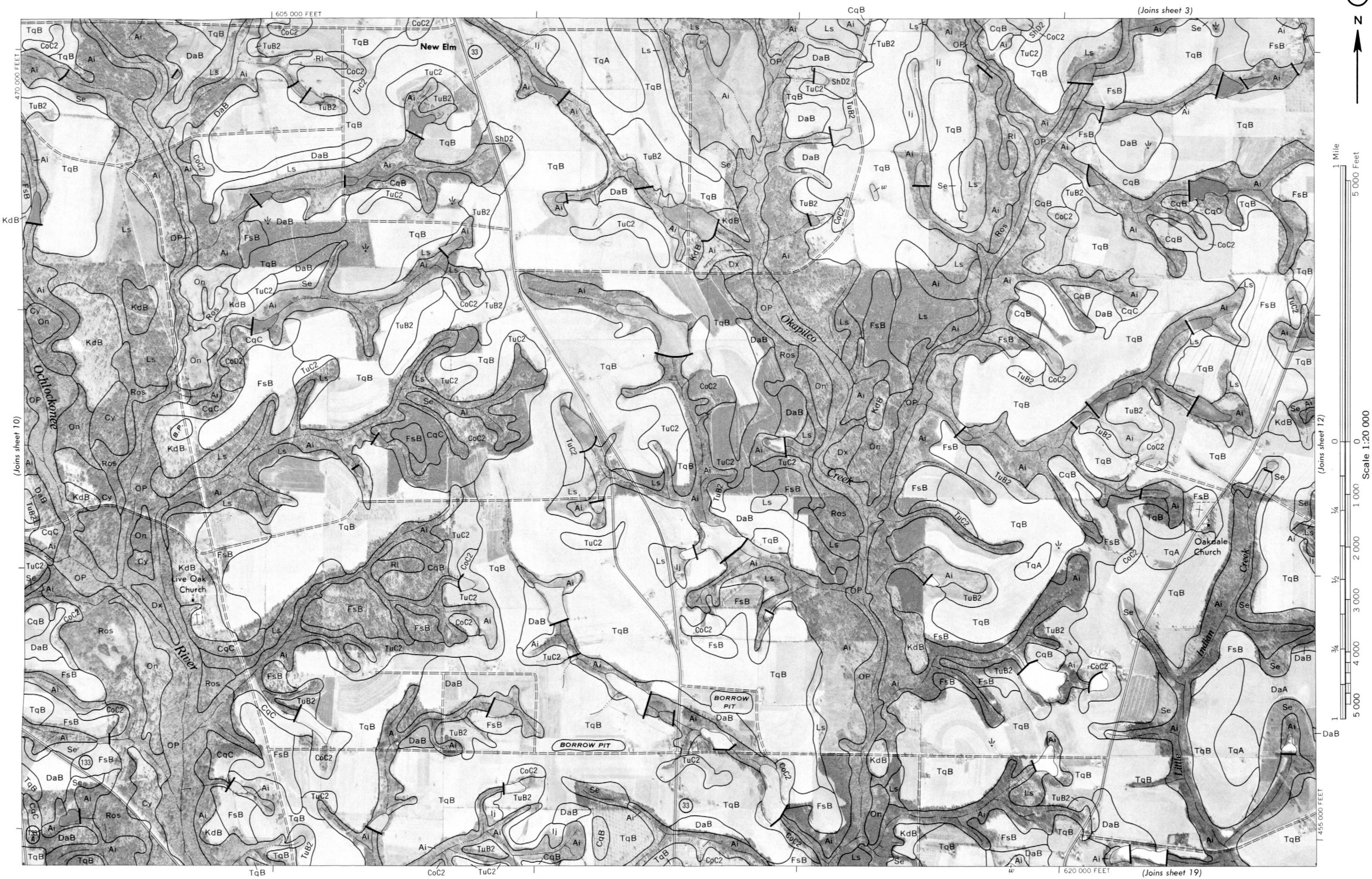

7
N
700 000 FEET
485 000 FEET
475 000 FEET
720 000 FEET
TIFT COUNTY
COLQUITT COUNTY
COOK COUNTY
Little River
Brushy Creek
SOUTHERN
BORROW PIT
Bethlehem Church
Staunton
(Joins sheet 6)
(Joins sheet 8)
(Join sheet 15)
1 Mile
5 000 Feet
Scale 1:20 000


N
1 Mile
5 000 Feet
0
0
Scale 1:20 000
¼
1 000
2 000
½
3 000
¾
4 000
5 000
1
(Joins lower inset)
(Joins sheet 7)
(Joins sheet 16)
725 000 FEET
475 000 FEET
745 000 FEET
485 000 FEET
TIFT COUNTY
BERRIEN COUNTY
New River
TqB
Se
OP
Ai
FsB
Cy
TuB2
Ls
Ros
CoC2
Ij
DaB
Ad
CqC
(Joins sheet 16)
(Joins sheet 25)
755 000 FEET
750 000 FEET
456 000
457 000
ShB2
CqB
1,000 AND 5,000-FOOT GRID TICKS
730 000 FEET
725 000 FEET
492 000 FEET
488 000 FEET
KdB
(Joins upper left)
4,000 AND 5,000-FOOT GRID TICKS

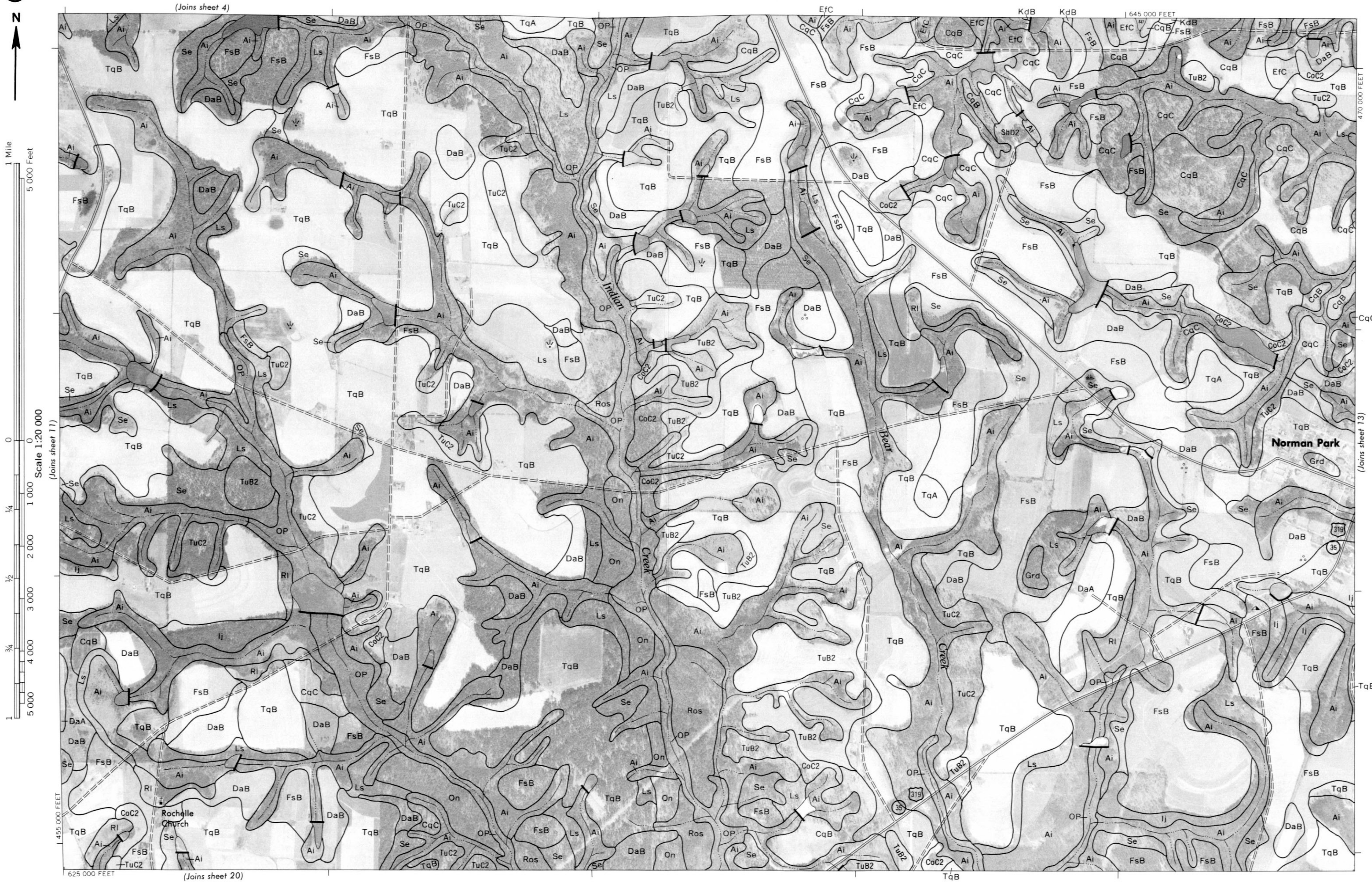

(Joins sheet 1)
(Joins sheet 10)
(Joins sheet 17)
555 000 FEET
575 000 FEET
470 000 FEET
455 000 FEET
MITCHELL COUNTY
Cool Springs Church
Mt Sinai Church
Poplar Arbor Church
Bridge Creek
water
270
N
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

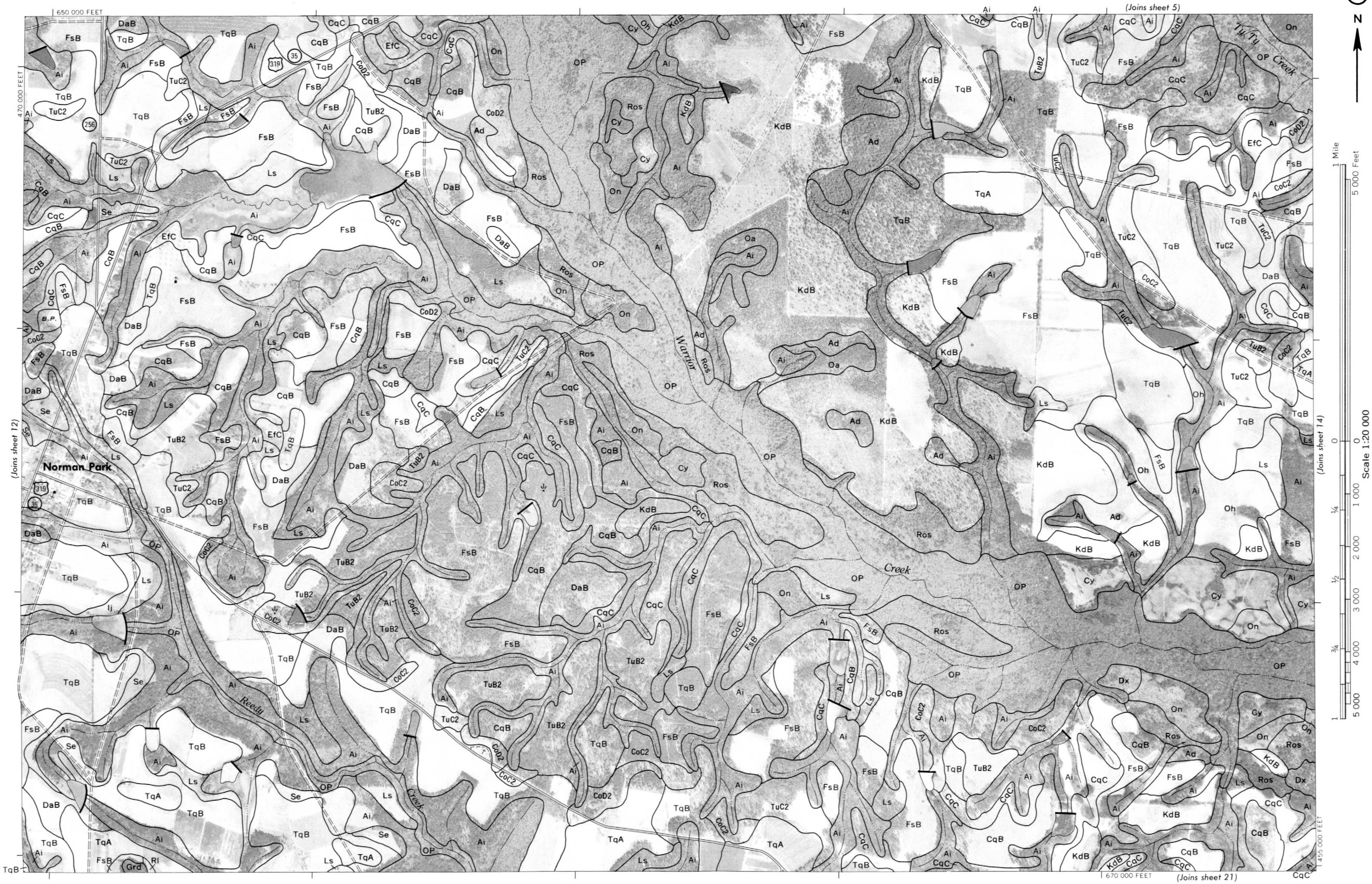

10
N
(Joins sheet 2)
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 18)
600 000 FEET
470 000 FEET
455 000 FEET
580 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
Ochlockonee
River
Mill
Pond
Creek
GEORGIA
NORTHERN
Sigsbee
Rose of Sharon Church
133
133 A
water

COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 11

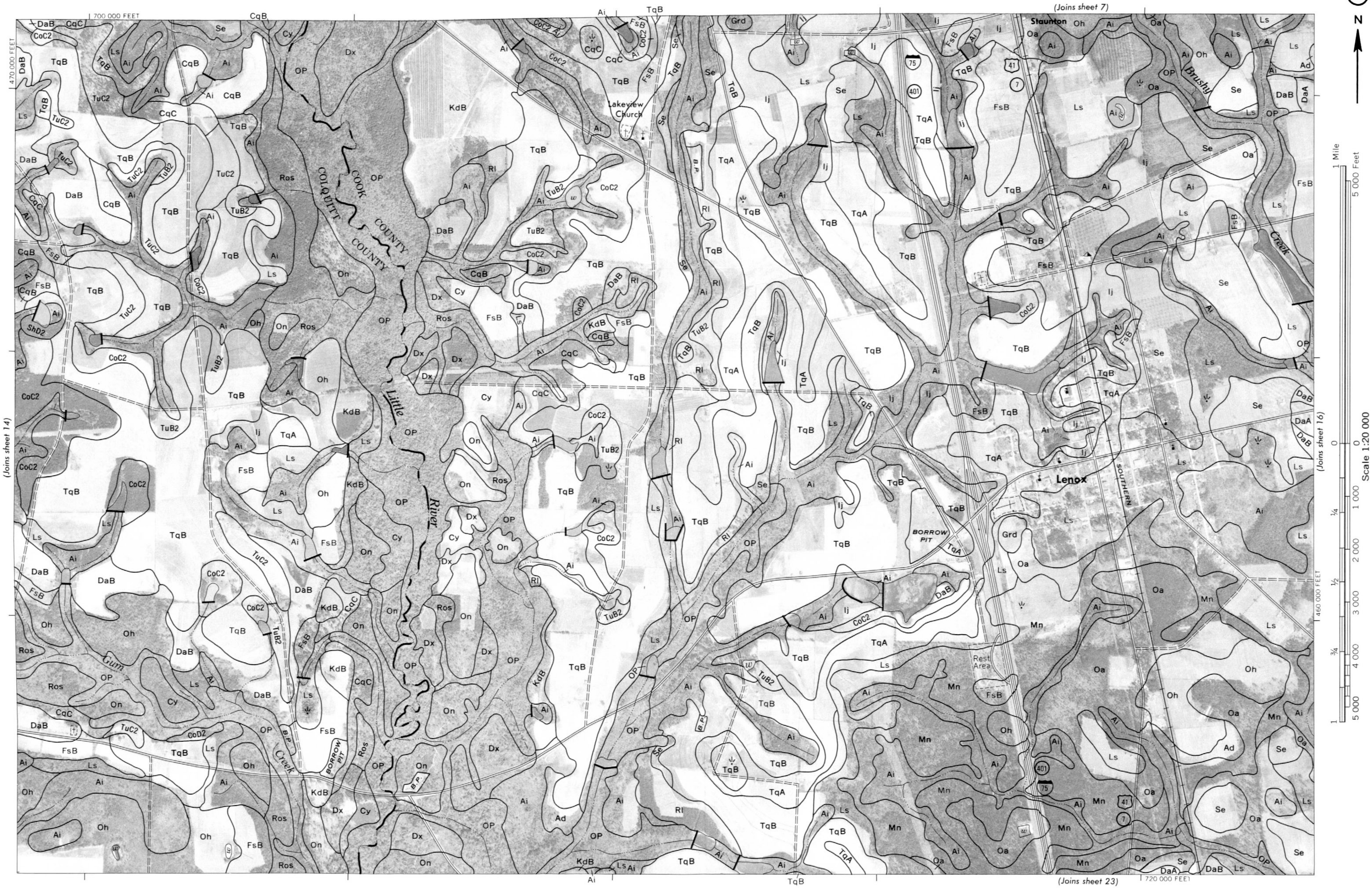


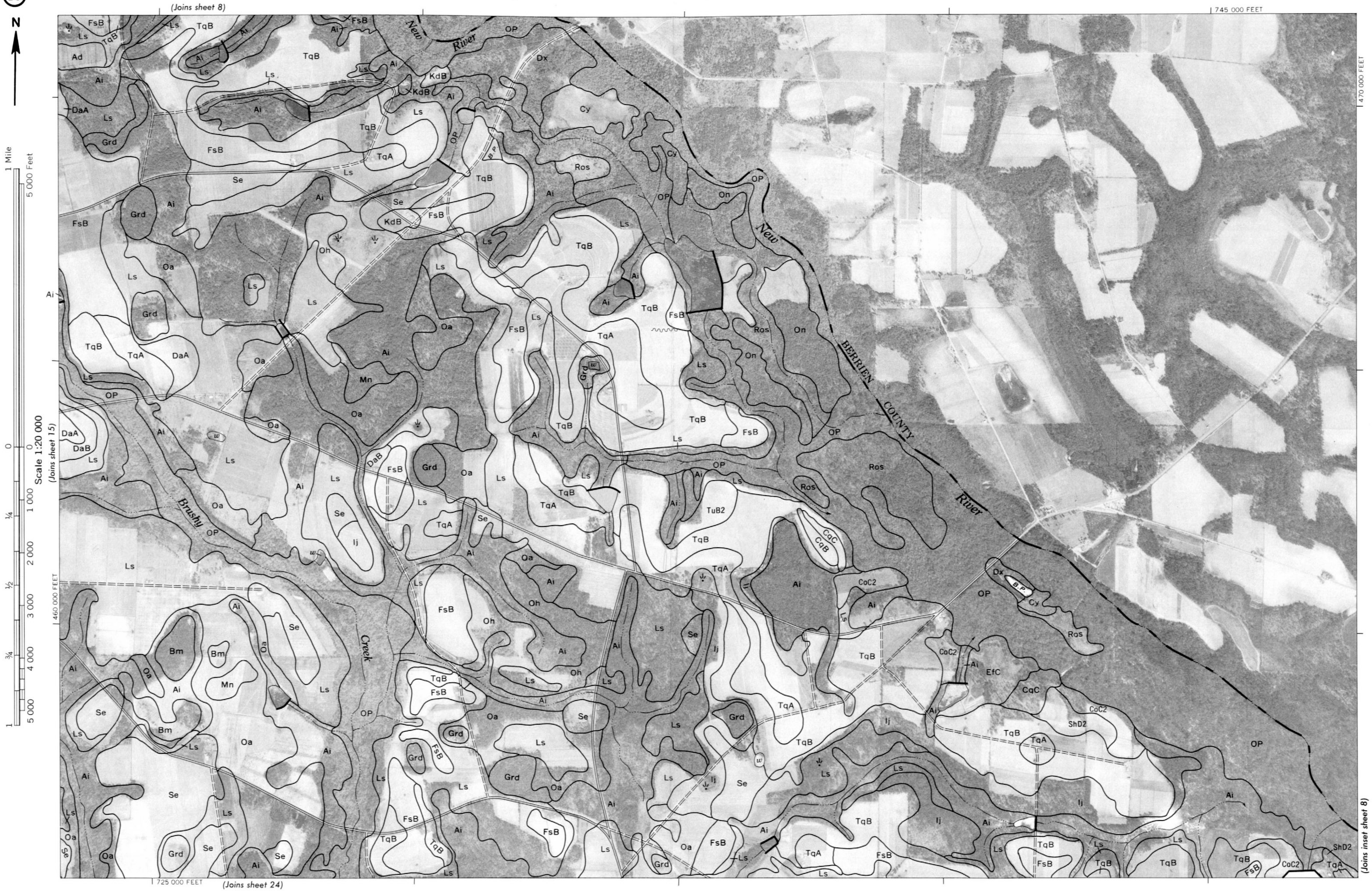
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 12



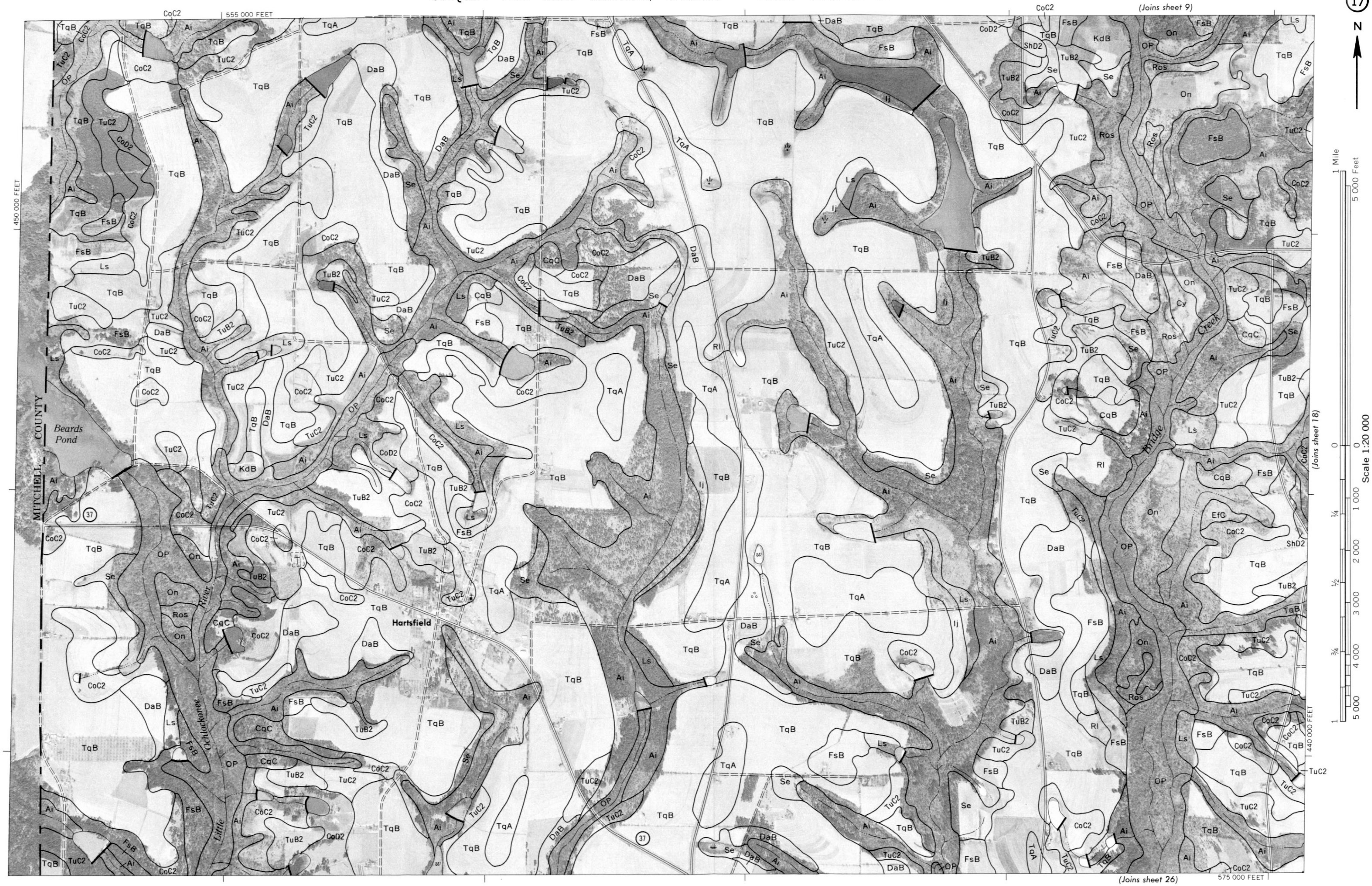

N
(Joins sheet 5)
(Joins sheet 12)
(Joins sheet 14)
(Joins sheet 21)
650 000 FEET
470 000 FEET
670 000 FEET
455 000 FEET
Norman Park
Warrior
Creek
Reedy
Creek
Ty Ty
Creek
B.P.
319
35
256
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000


N
(Joins sheet 6)
(Joins sheet 13)
(Joins sheet 15)
(Joins sheet 22)
1 Mile
5 000 Feet
Scale 1:20 000
695 000 FEET
470 000 FEET
675 000 FEET
455 000 FEET
Sapp Creek
Ty Ty Creek
Warrior Creek
Gum Creek
Power Station
Leila Church


15
N
(Joins sheet 7)
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 23)
700 000 FEET
720 000 FEET
470 000 FEET
460 000 FEET
COLQUITT COUNTY
COOK COUNTY
Little River
Gum Creek
Brushy Creek
Lakeview Church
Staunton
Lenox
SOUTHERN
BORROW PIT
Rest Area
B.P.
1 Mile
5 000 Feet
Scale 1:20 000

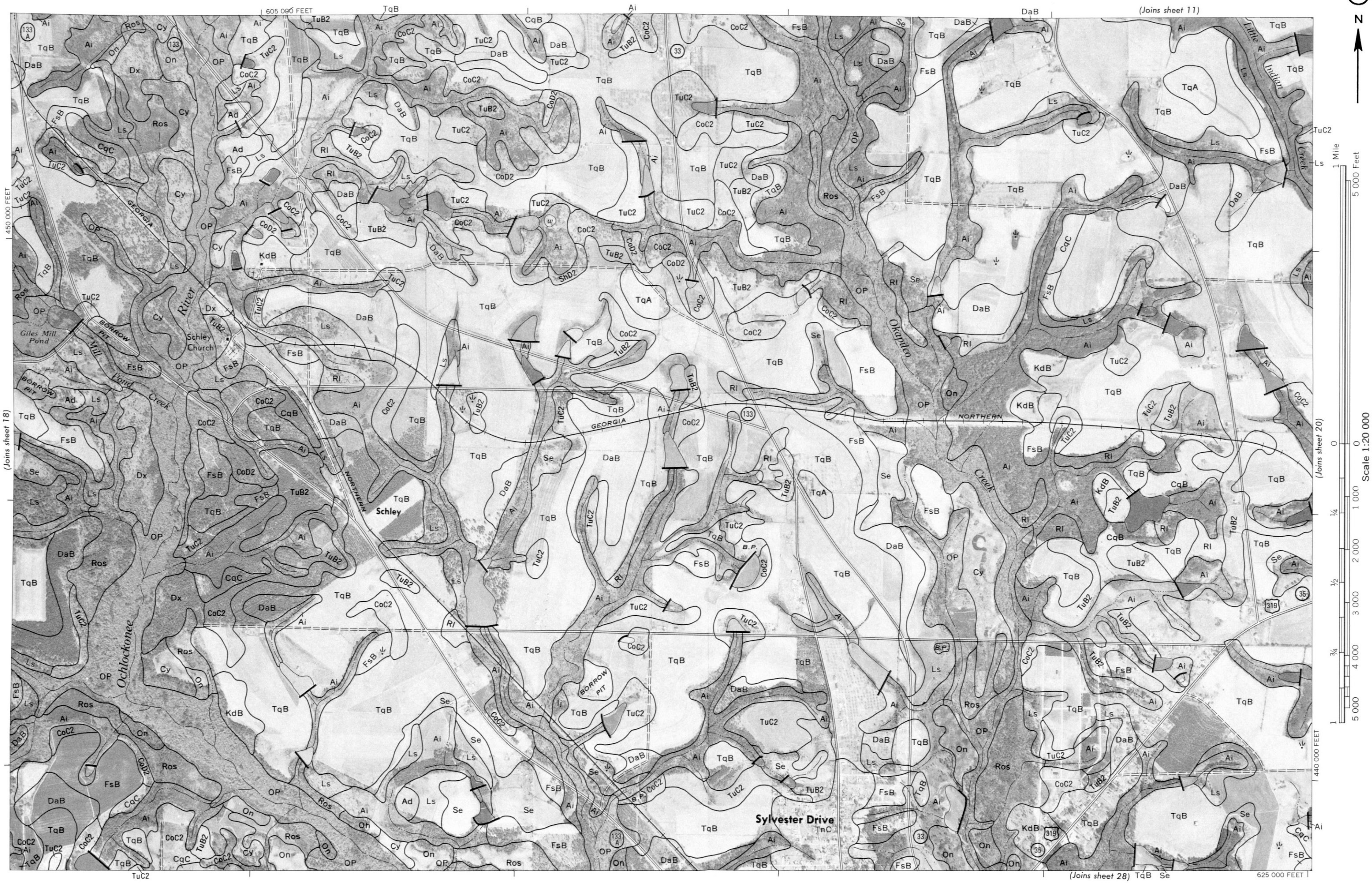


N
(Joins sheet 8)
(Joins sheet 15)
(Joins sheet 24)
(Joins inset sheet 8)
745 000 FEET
470 000 FEET
460 000 FEET
725 000 FEET
Scale 1:20 000
1 Mile
5 000 Feet
New River
BERRIEN COUNTY
Brushy Creek

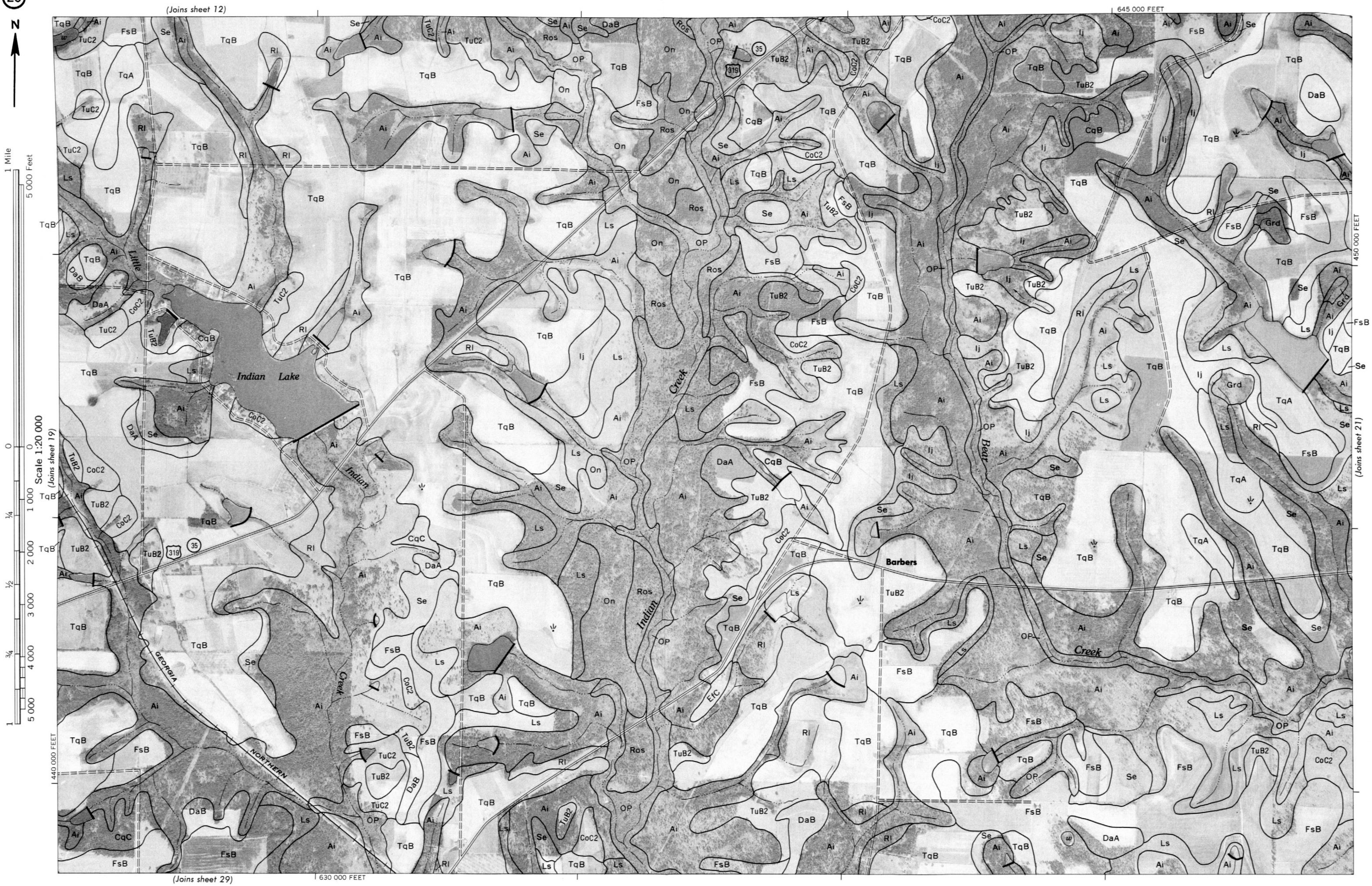

17
N
(Joins sheet 9)
(Joins sheet 18)
(Joins sheet 26)
555 000 FEET
450 000 FEET
440 000 FEET
575 000 FEET
MITCHELL COUNTY
Beards Pond
Hartsfield
Little Ochlockonee River
Bridge Creek
1 Mile
5 000 Feet
Scale 1:20 000

18

COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 18

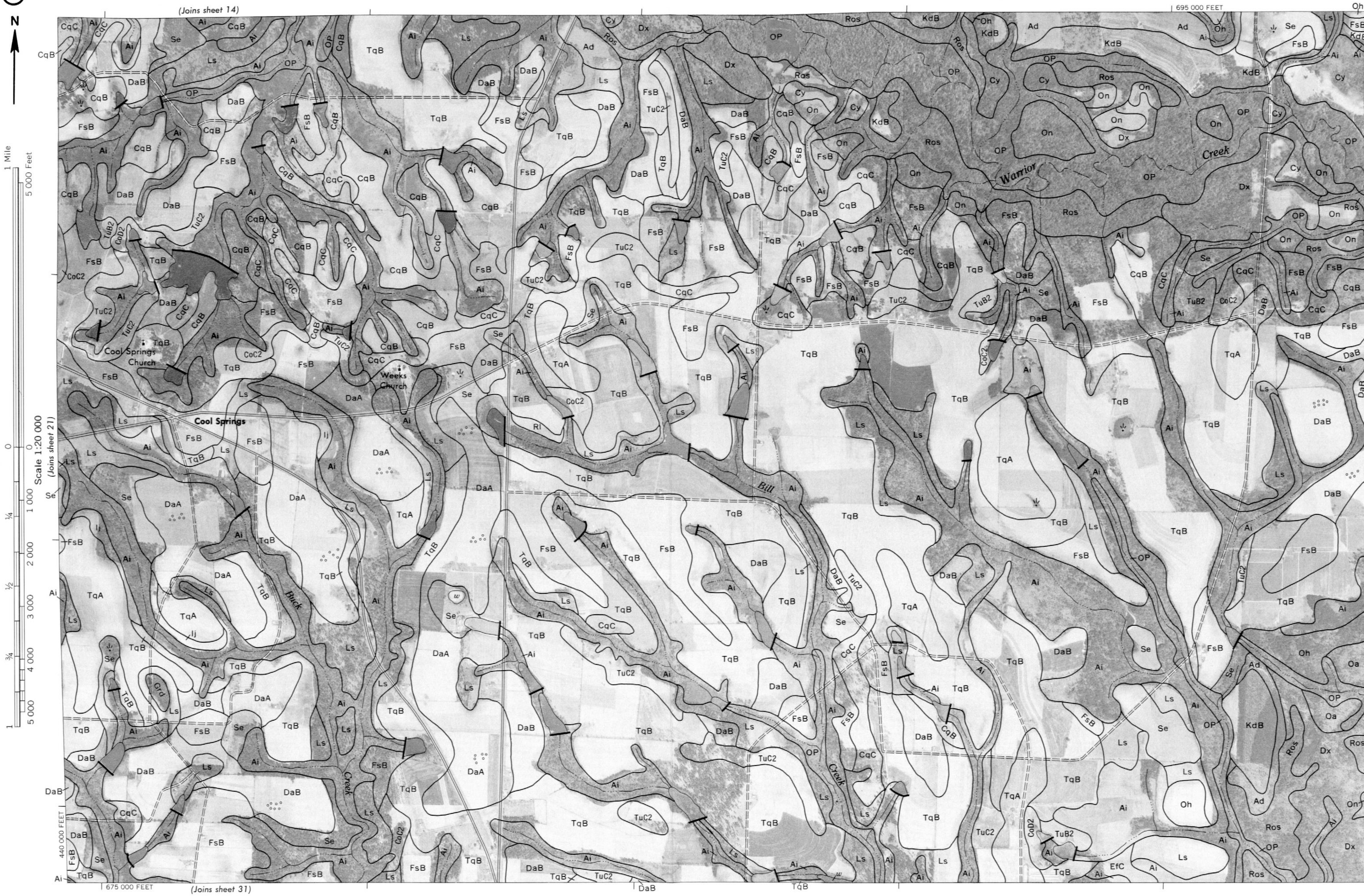

N
605 000 FEET
(Joins sheet 11)
(Joins sheet 18)
(Joins sheet 20)
(Joins sheet 28)
450 000 FEET
440 000 FEET
625 000 FEET
Giles Mill Pond
Mill Pond Creek
Ochlockonee River
Okapilco Creek
Little Indian Creek
Schley Church
Schley
Sylvester Drive
GEORGIA NORTHERN
BORROW PIT
1 Mile
5 000 Feet
Scale 1:20 000

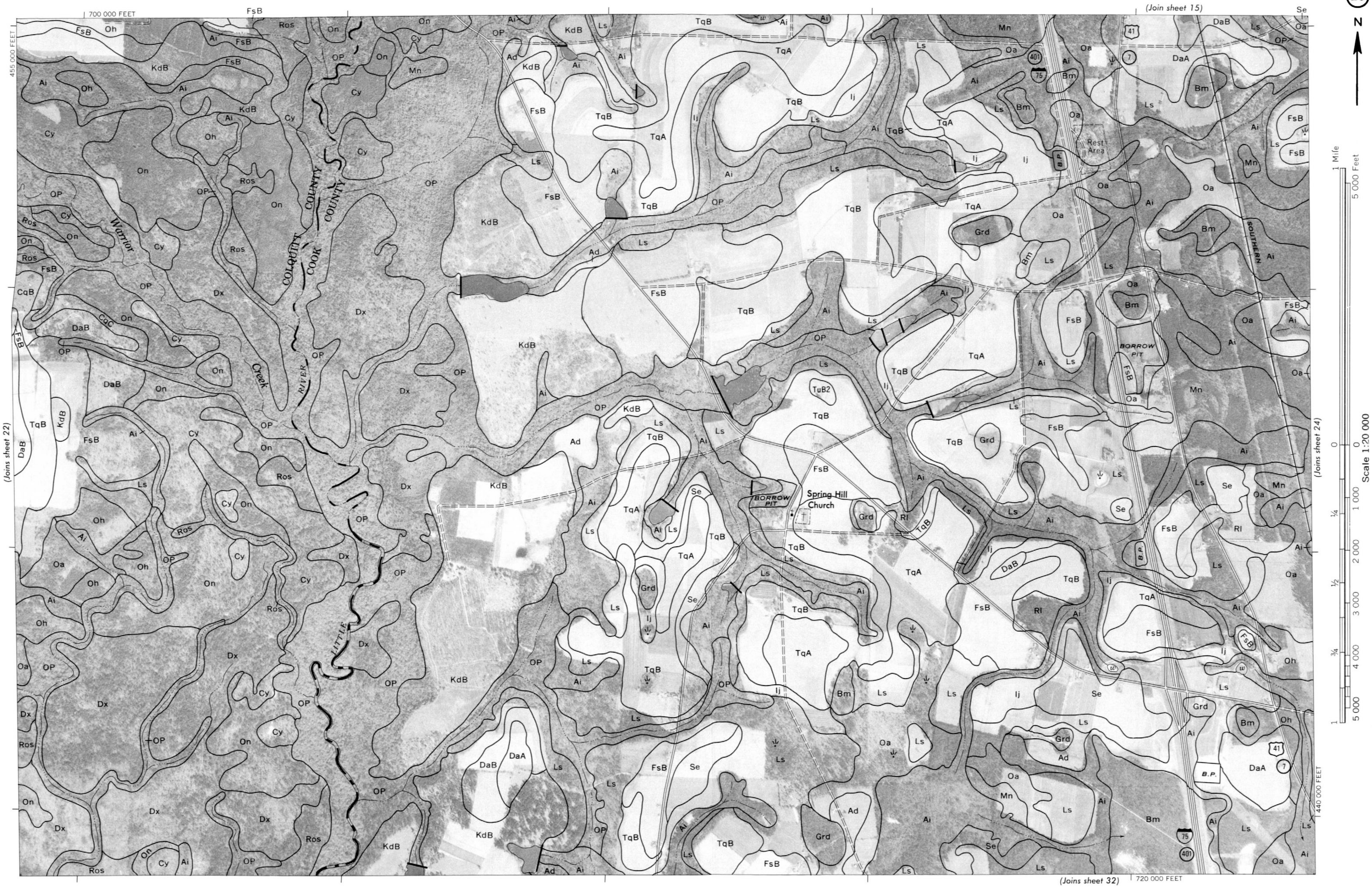
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 20

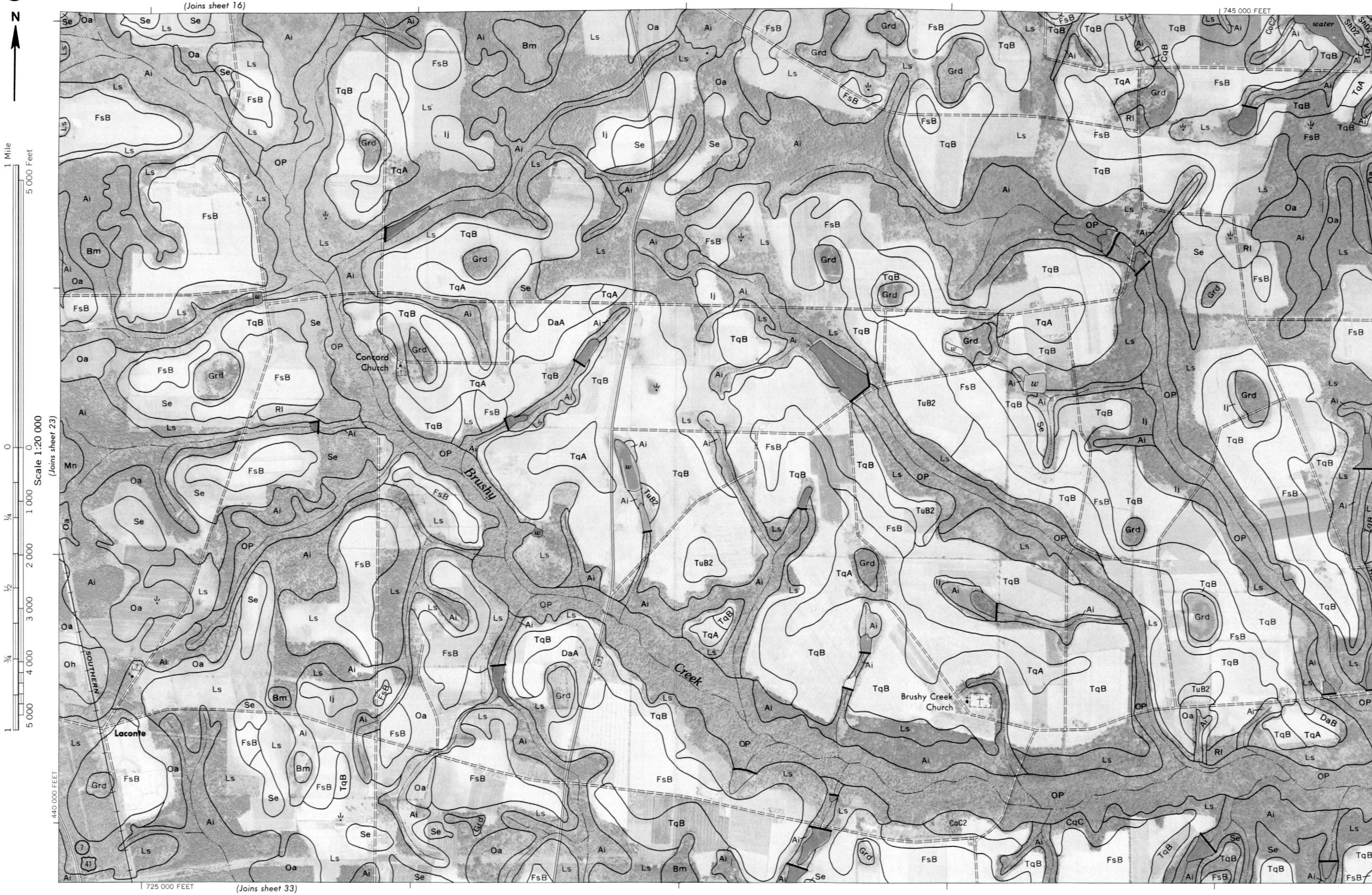


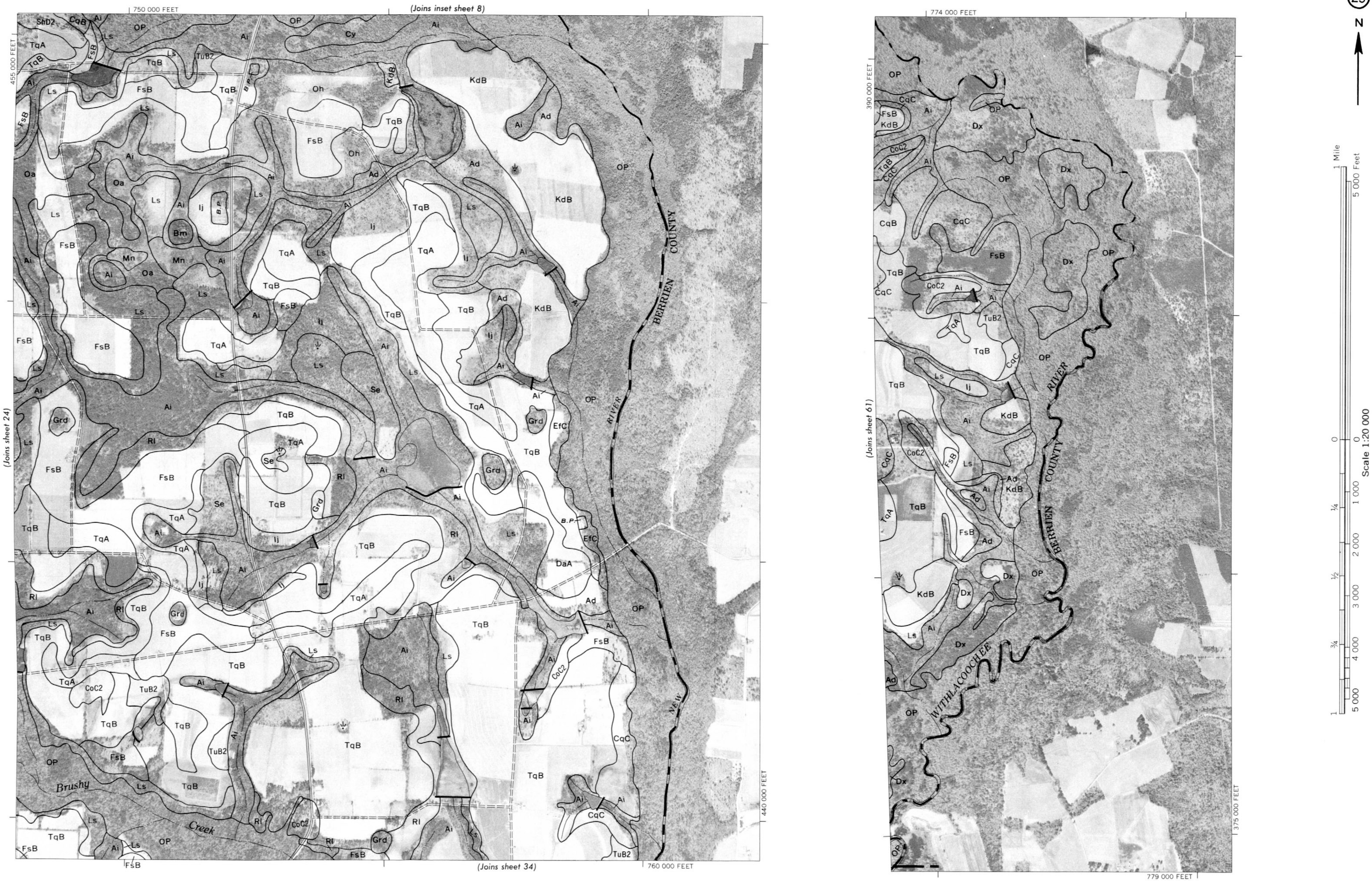

N
(Joins sheet 13)
(Joins sheet 20)
(Joins sheet 22)
(Joins sheet 30)
650 000 FEET
450 000 FEET
440 000 FEET
670 000 FEET
Reedy Creek
Bear Creek
Bull Creek
Mt. Zion Church
BORROW PIT
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 22

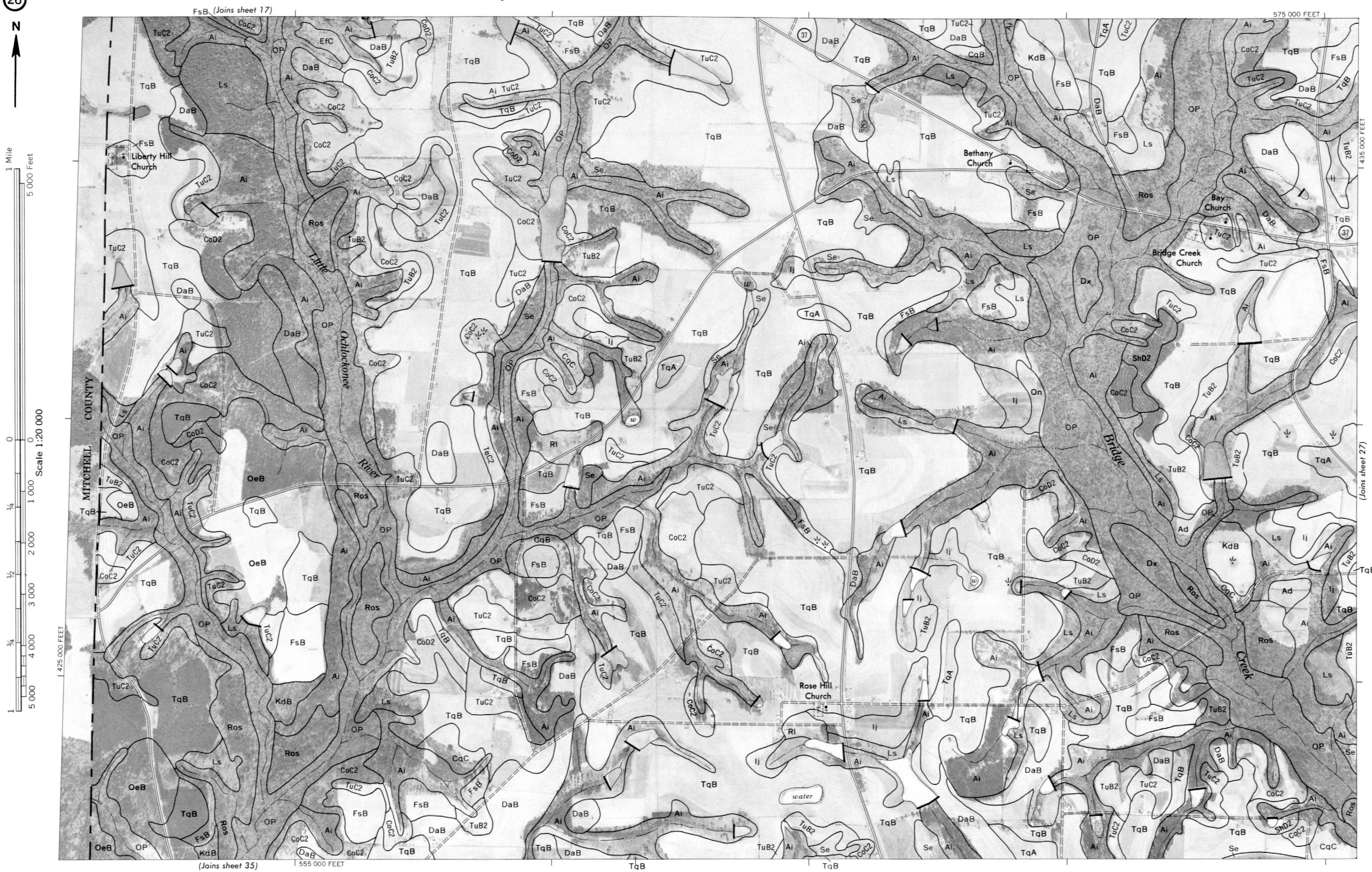



23
N
(Join sheet 15)
(Joins sheet 22)
(Joins sheet 24)
(Joins sheet 32)
700 000 FEET
720 000 FEET
455 000 FEET
440 000 FEET
Warrior Creek
LITTLE RIVER
COLQUITT COUNTY
COOK COUNTY
SOUTHERN
Spring Hill Church
BORROW PIT
Rest Area
B.P.
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

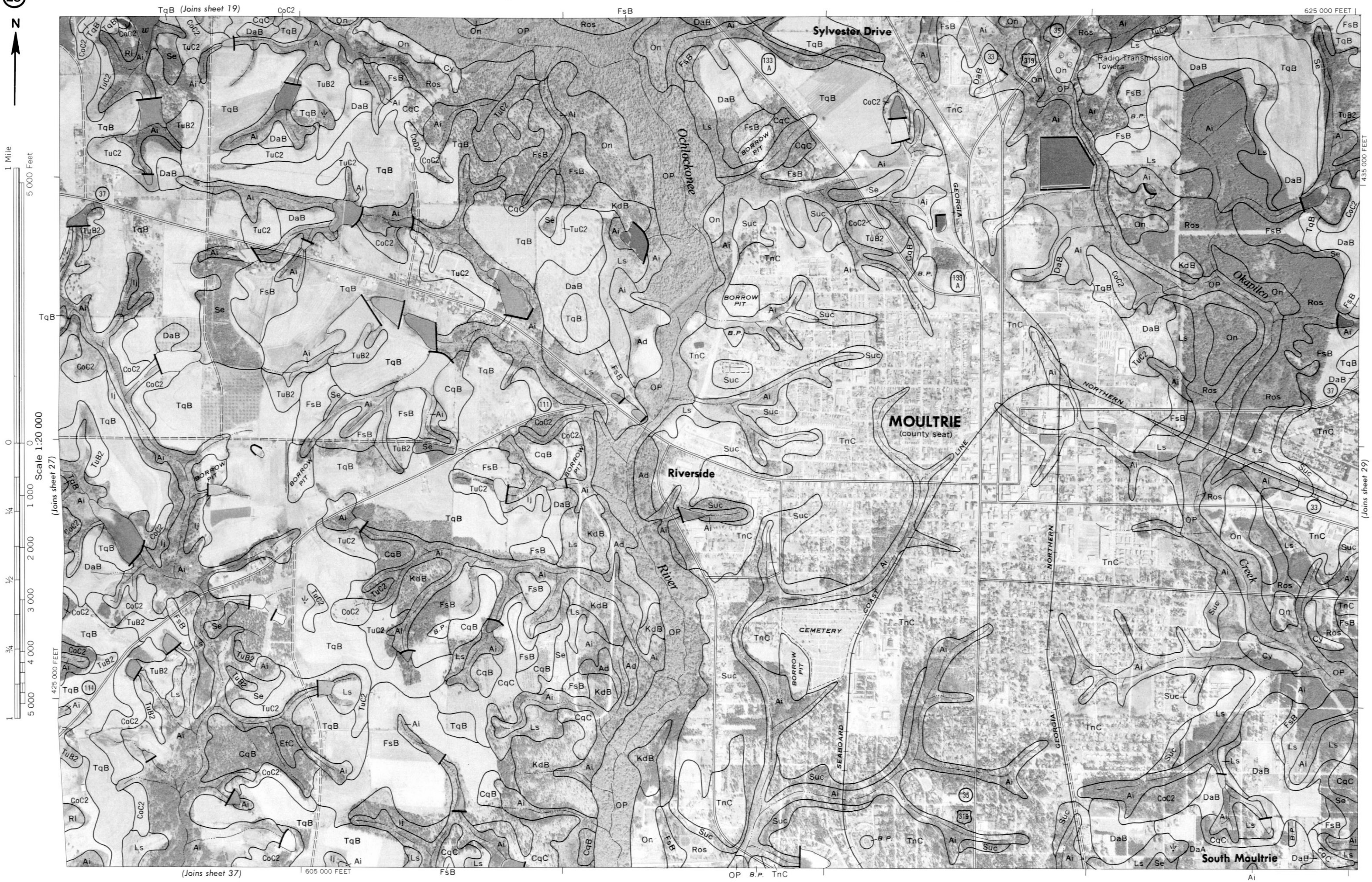

N
(Joins sheet 16)
(Joins sheet 23)
(Joins sheet 25)
(Joins sheet 33)
745 000 FEET
455 000 FEET
440 000 FEET
725 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
Concord Church
Brushy Creek
Brushy Creek Church
Laconte
SOUTHERN
water

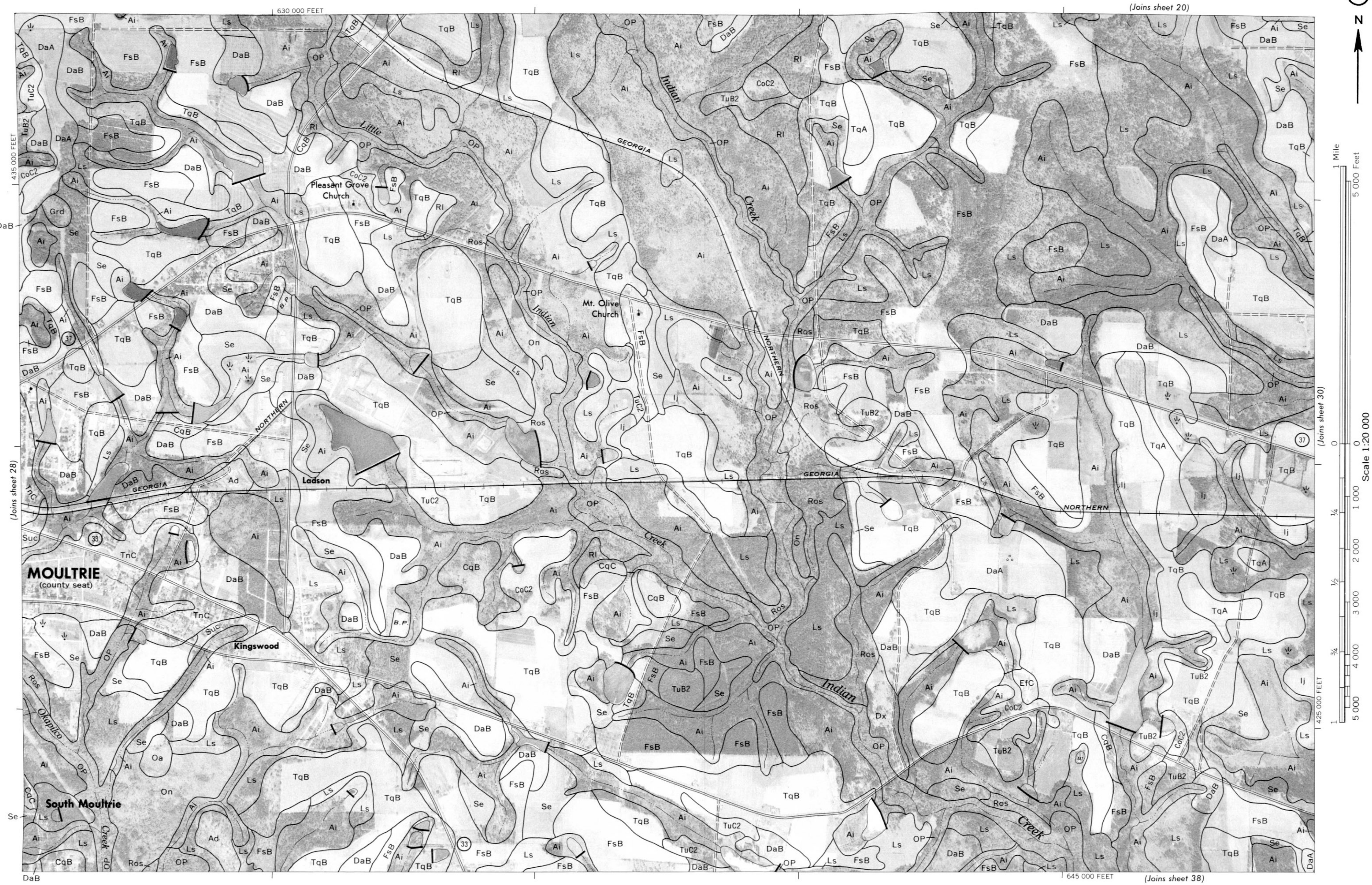

25
N
750 000 FEET
(Joins inset sheet 8)
455 000 FEET
(Joins sheet 24)
(Joins sheet 34)
760 000 FEET
440 000 FEET
774 000 FEET
390 000 FEET
(Joins sheet 61)
375 000 FEET
779 000 FEET
BERRIEN COUNTY
NEW RIVER
WITHLACOOCHEE RIVER
Brushy Creek
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

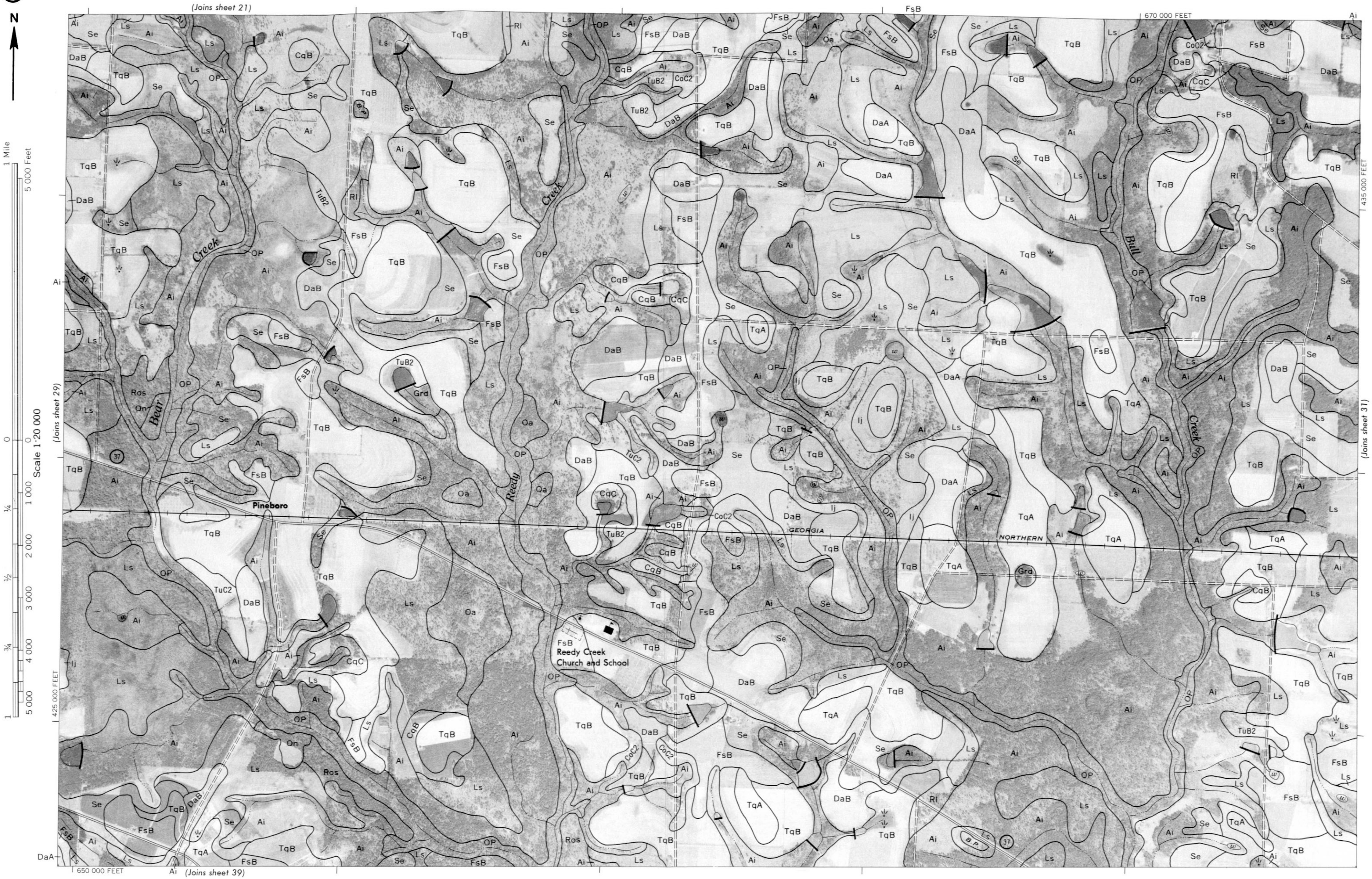
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 26



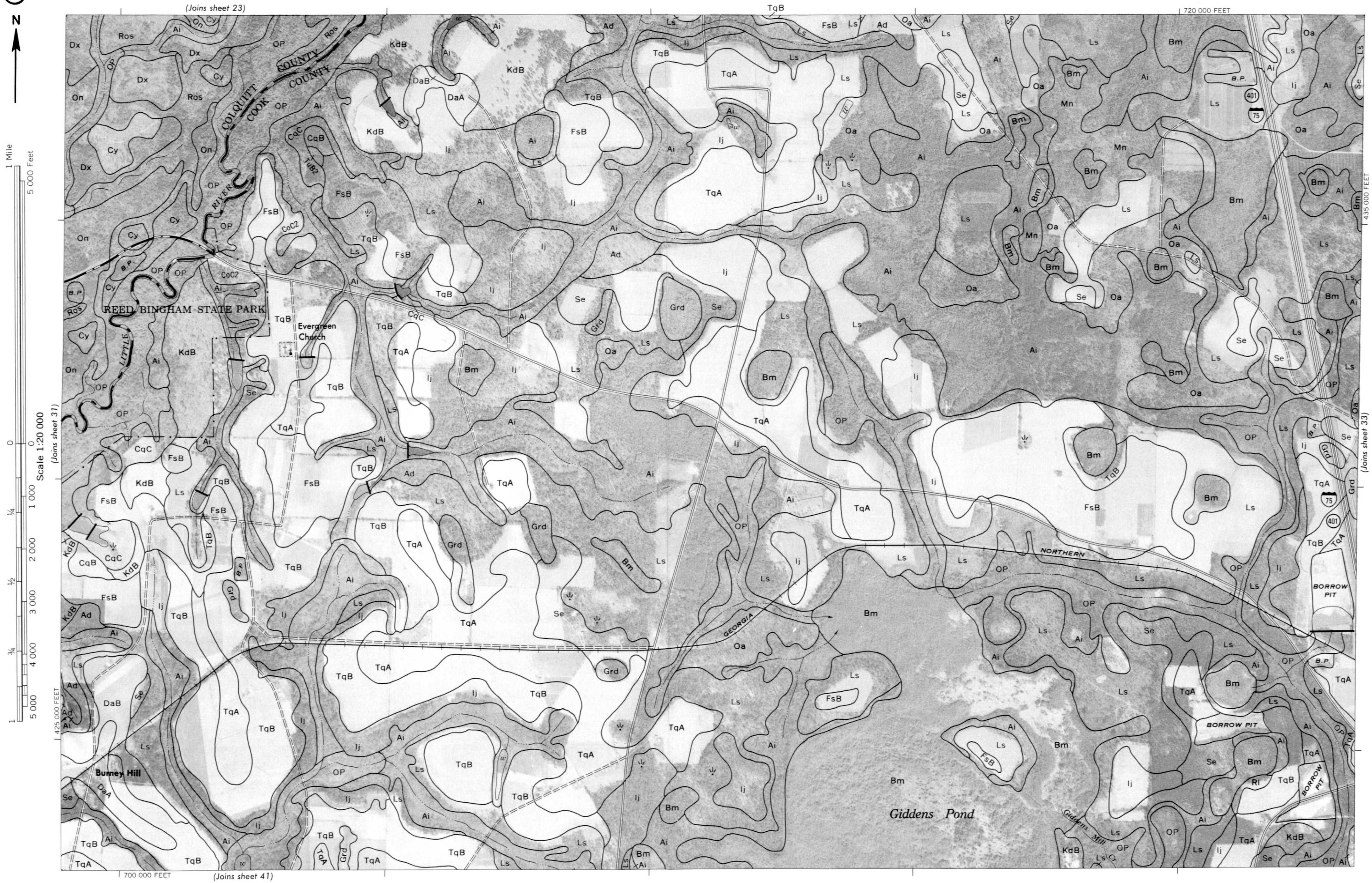

N
580 000 FEET
435 000 FEET
425 000 FEET
600 000 FEET
(Joins sheet 18)
(Joins sheet 26)
(Joins sheet 28)
(Joins sheet 36)
Funston
Little Creek
Bridge Creek
1 Mile
5 000 Feet
Scale 1:20 000

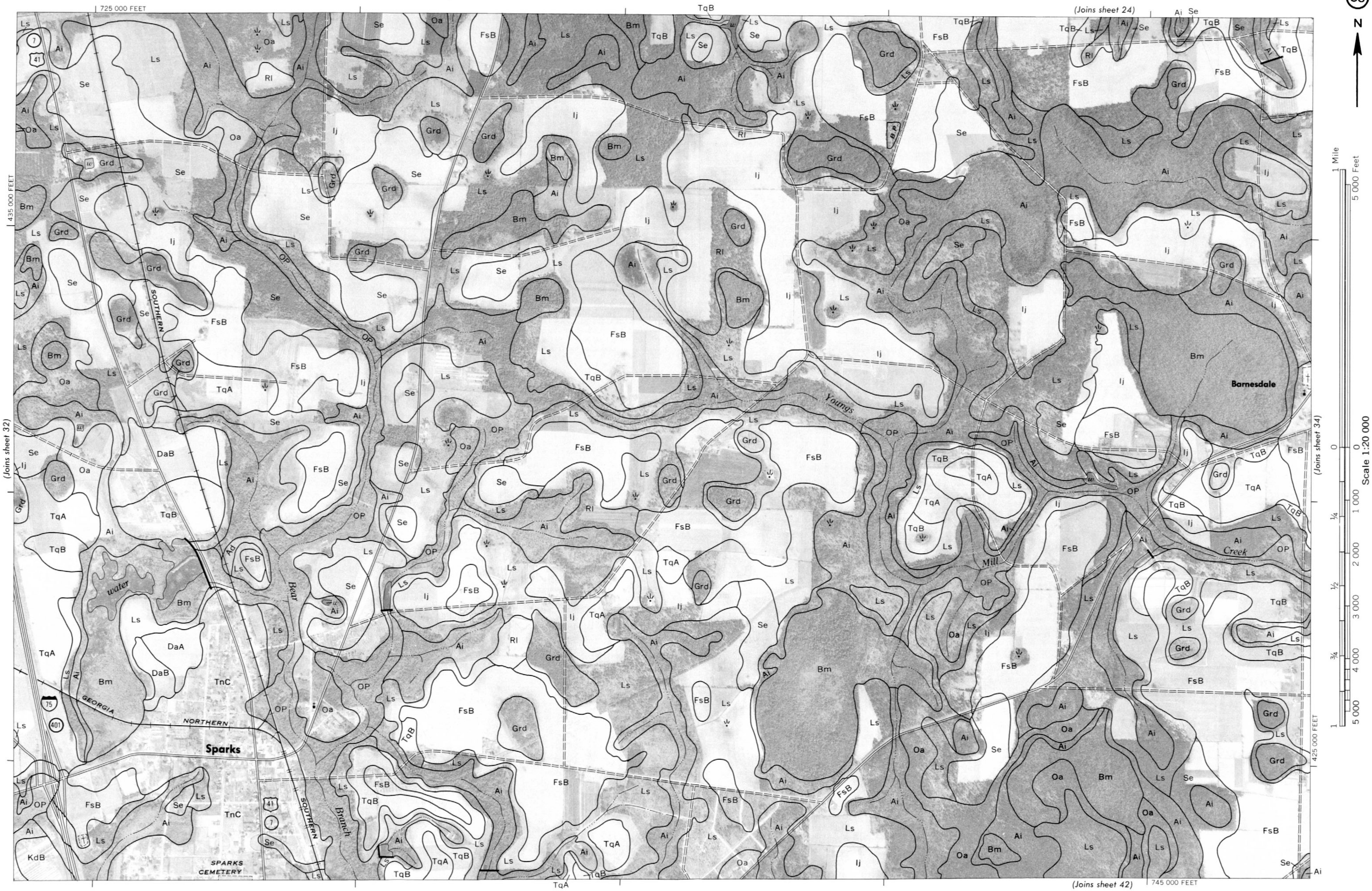

28
N
1 Mile
5 000 Feet
0
Scale 1:20 000
1 000
2 000
3 000
4 000
5 000
(Joins sheet 19)
(Joins sheet 27)
(Joins sheet 29)
(Joins sheet 37)
625 000 FEET
435 000 FEET
425 000 FEET
605 000 FEET
MOULTRIE
(county seat)
Riverside
South Moultrie
Sylvester Drive
Radio Transmission Towers
Ochlockonee
River
Okapilco
Creek
CEMETERY
BORROW PIT
NORTHERN
GEORGIA
SEABOARD
COAST
LINE


(Joins sheet 20)
(Joins sheet 28)
(Joins sheet 30)
(Joins sheet 38)
630 000 FEET
645 000 FEET
435 000 FEET
425 000 FEET
N
MOULTRIE
(county seat)
South Moultrie
Kingswood
Ladson
Pleasant Grove Church
Mt. Olive Church
Little
Indian
Creek
Okapilco
GEORGIA
NORTHERN
1 Mile
5 000 Feet
Scale 1:20 000

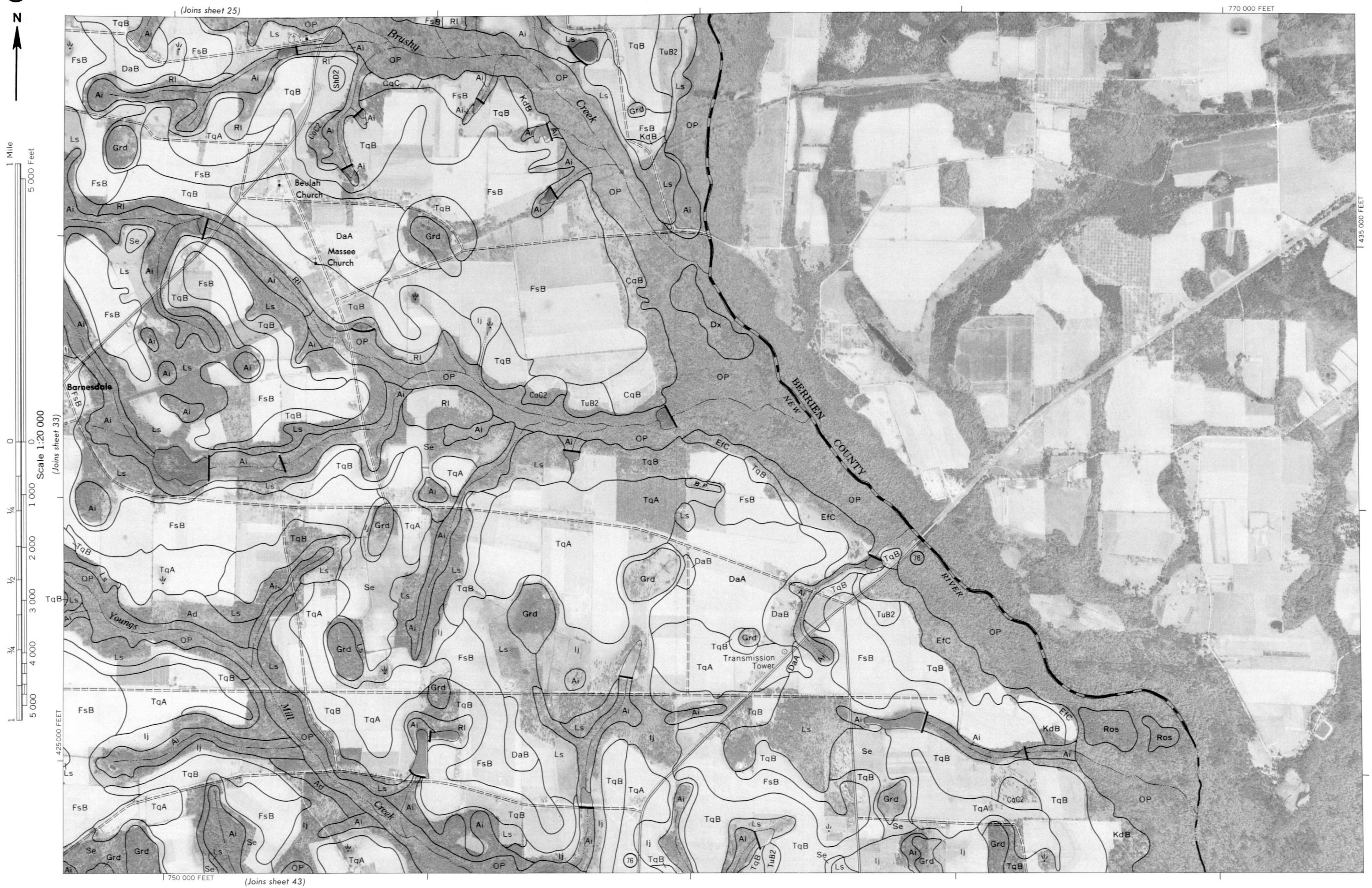

N
(Joins sheet 21)
(Joins sheet 29)
(Joins sheet 31)
(Joins sheet 39)
670 000 FEET
650 000 FEET
435 000 FEET
425 000 FEET
Scale 1:20 000
1 Mile
5 000 Feet
Bear Creek
Reedy Creek
Bull Creek
Pineboro
Reedy Creek Church and School
GEORGIA NORTHERN
37

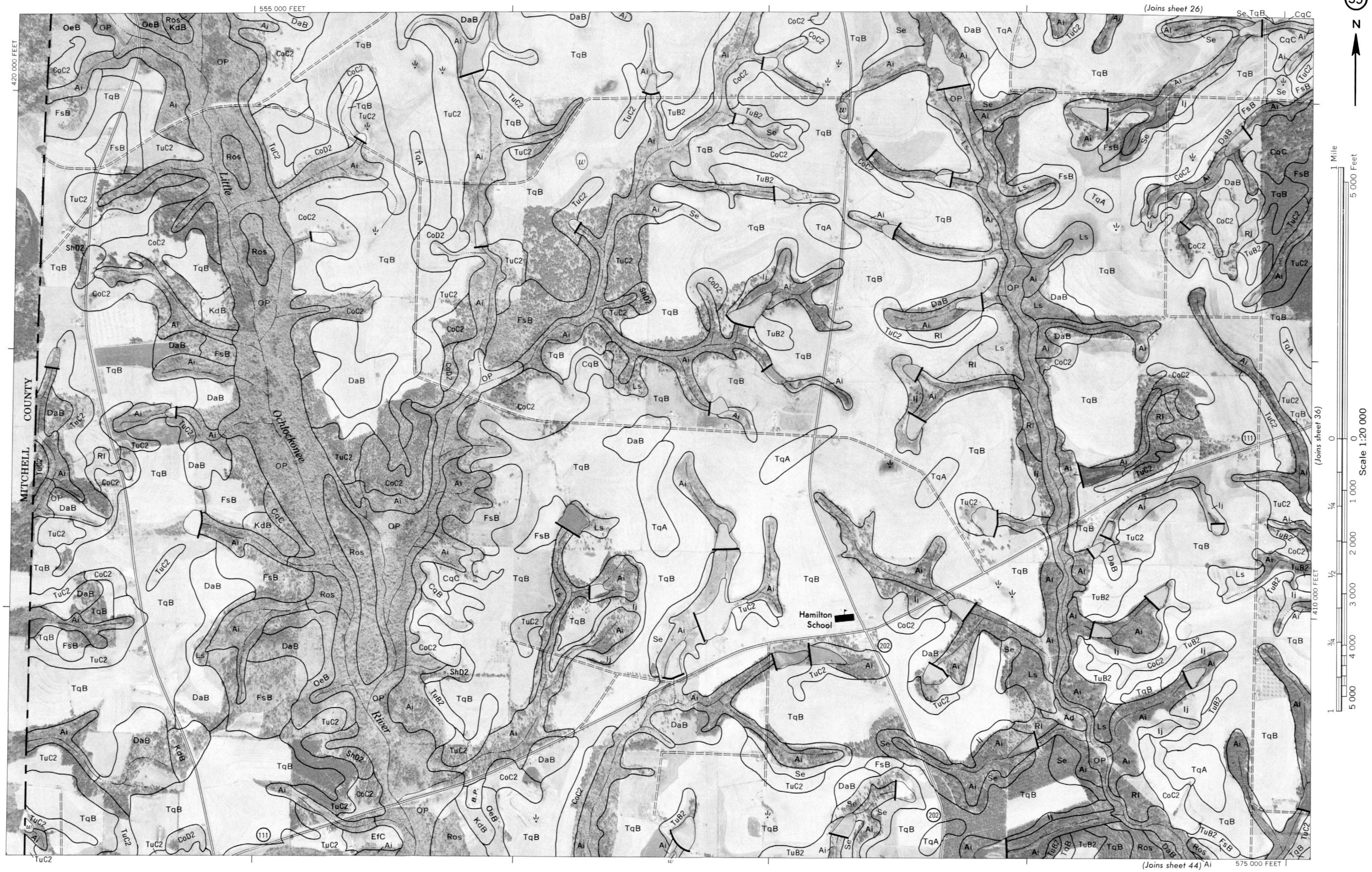

675 000 FEET
(Joins sheet 22)
435 000 FEET
(Joins sheet 30)
(Joins sheet 32)
425 000 FEET
695 000 FEET
(Joins sheet 40)
N
1 Mile
5 000 Feet
Scale 1:20 000
Ellenton
Buck Creek
Buck Creek Church
Bill Creek
REED BINGHAM STATE PARK
LITTLE RIVER
GEORGIA NORTHERN
COLQUITT COUNTY
COOK COUNTY
BORROW PIT
B.P.
water
37


N
(Joins sheet 23)
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 41)
720 000 FEET
700 000 FEET
435 000 FEET
425 000 FEET
Scale 1:20 000
1 Mile
5 000 Feet
COLQUITT COUNTY
COOK COUNTY
LITTLE RIVER
REED BINGHAM STATE PARK
Evergreen Church
Burney Hill
Giddens Pond
Giddens Mill
NORTHERN
GEORGIA
BORROW PIT


725 000 FEET
(Joins sheet 24)
435 000 FEET
(Joins sheet 32)
(Joins sheet 34)
425 000 FEET
(Joins sheet 42)
745 000 FEET
N
1 Mile
5 000 Feet
Scale 1:20 000
Sparks
Barnesdale
SPARKS CEMETERY
SOUTHERN
GEORGIA
NORTHERN
Youngs
Mill
Creek
Bear
Branch
water

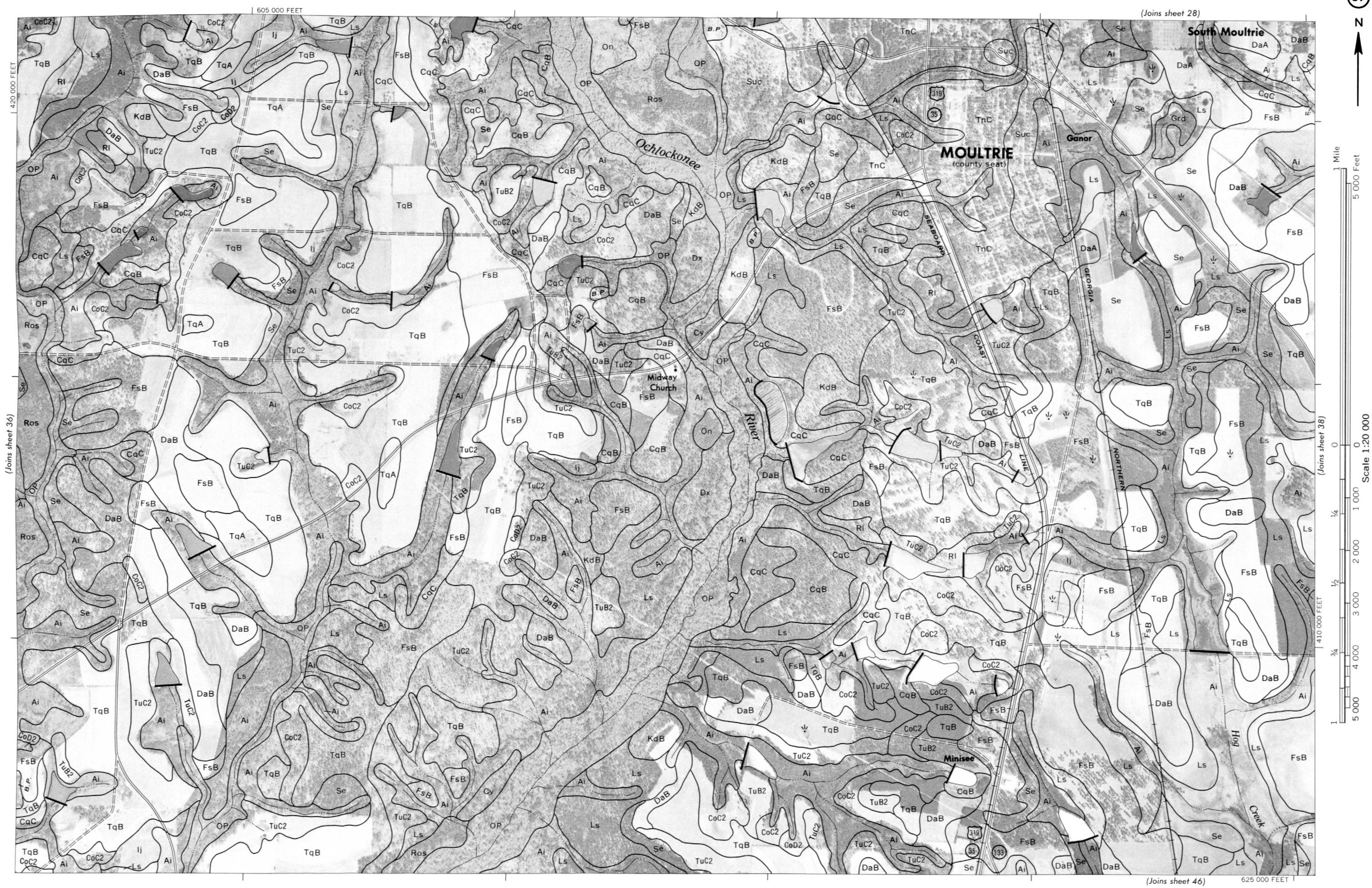
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 34




35
N
(Joins sheet 26)
(Joins sheet 36)
(Joins sheet 44)
555 000 FEET
575 000 FEET
420 000 FEET
410 000 FEET
MITCHELL COUNTY
Little Ochlockonee River
Hamilton School
111
202
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


N
(Joins sheet 27)
(Joins sheet 35)
(Joins sheet 37)
(Joins sheet 45)
600 000 FEET
420 000 FEET
410 000 FEET
580 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
Oak Grove Church
Kendallwood Church
Bridge Creek
Little Creek
BORROW PIT
B. P.

COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 37



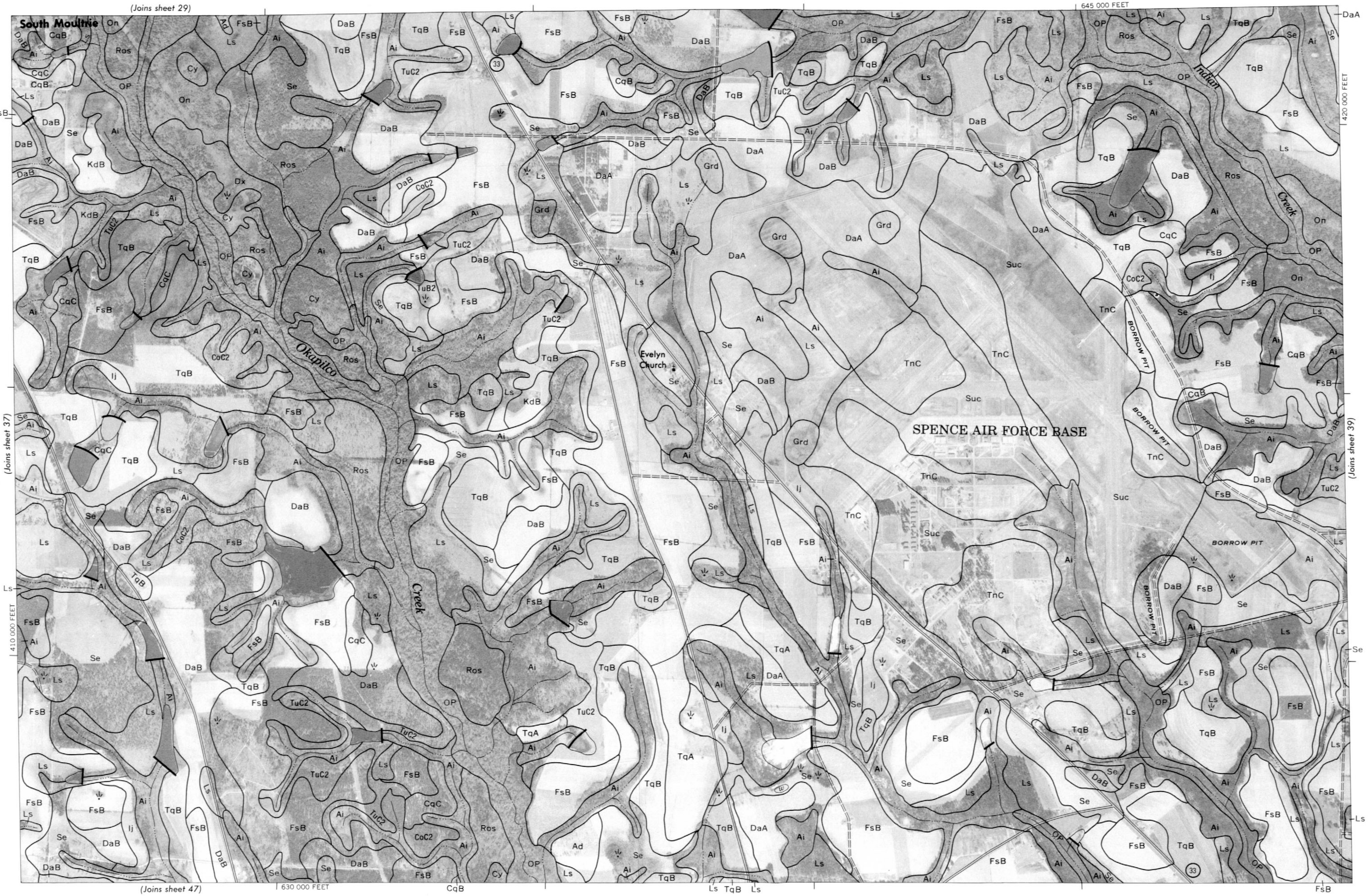
N

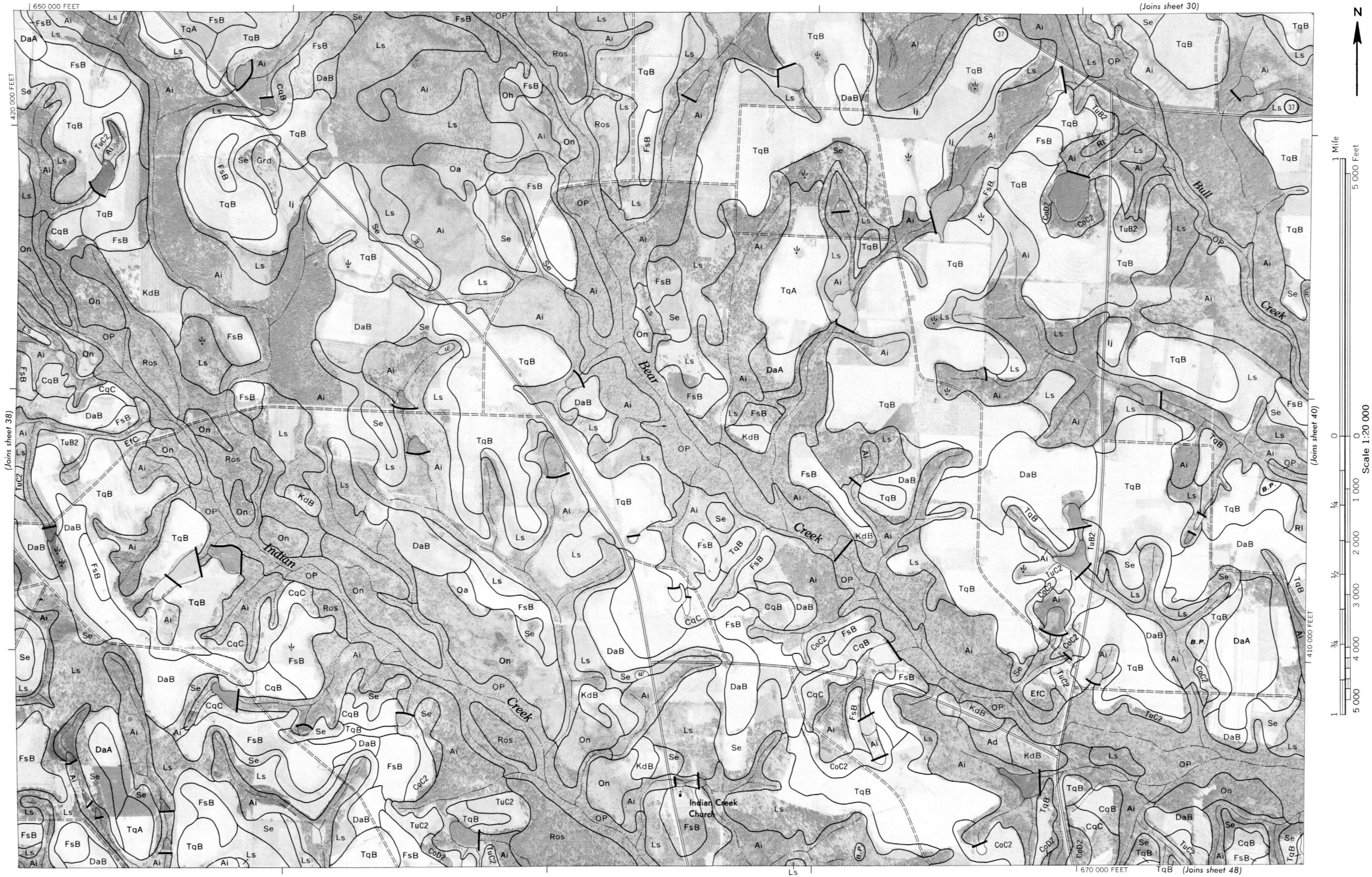
1 Mile

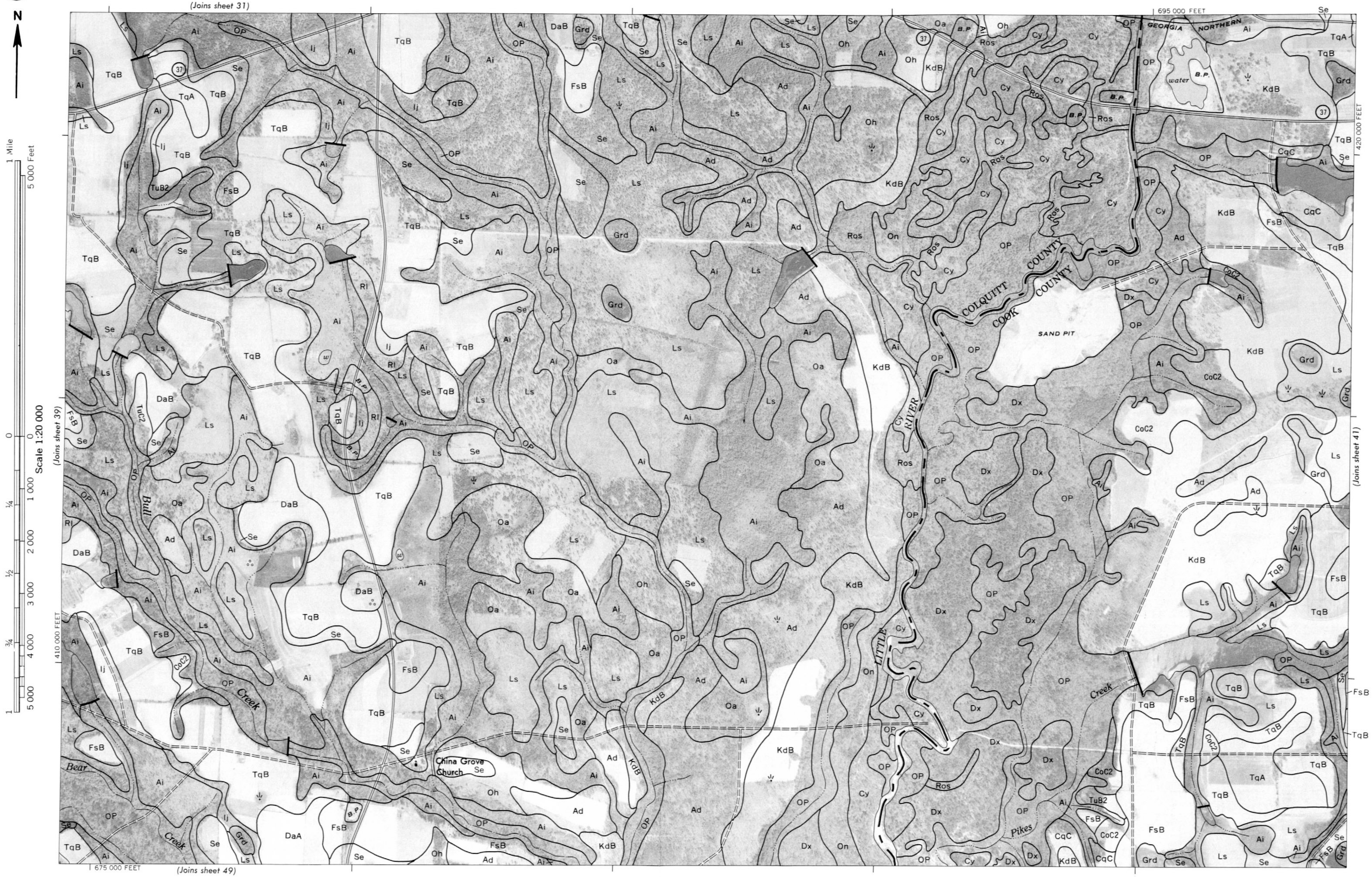
5 000 Feet

Scale 1:20 000

0 0 1 000 ¼ 2 000 ½ 3 000 4 000 ¾ 5 000 1 5 000



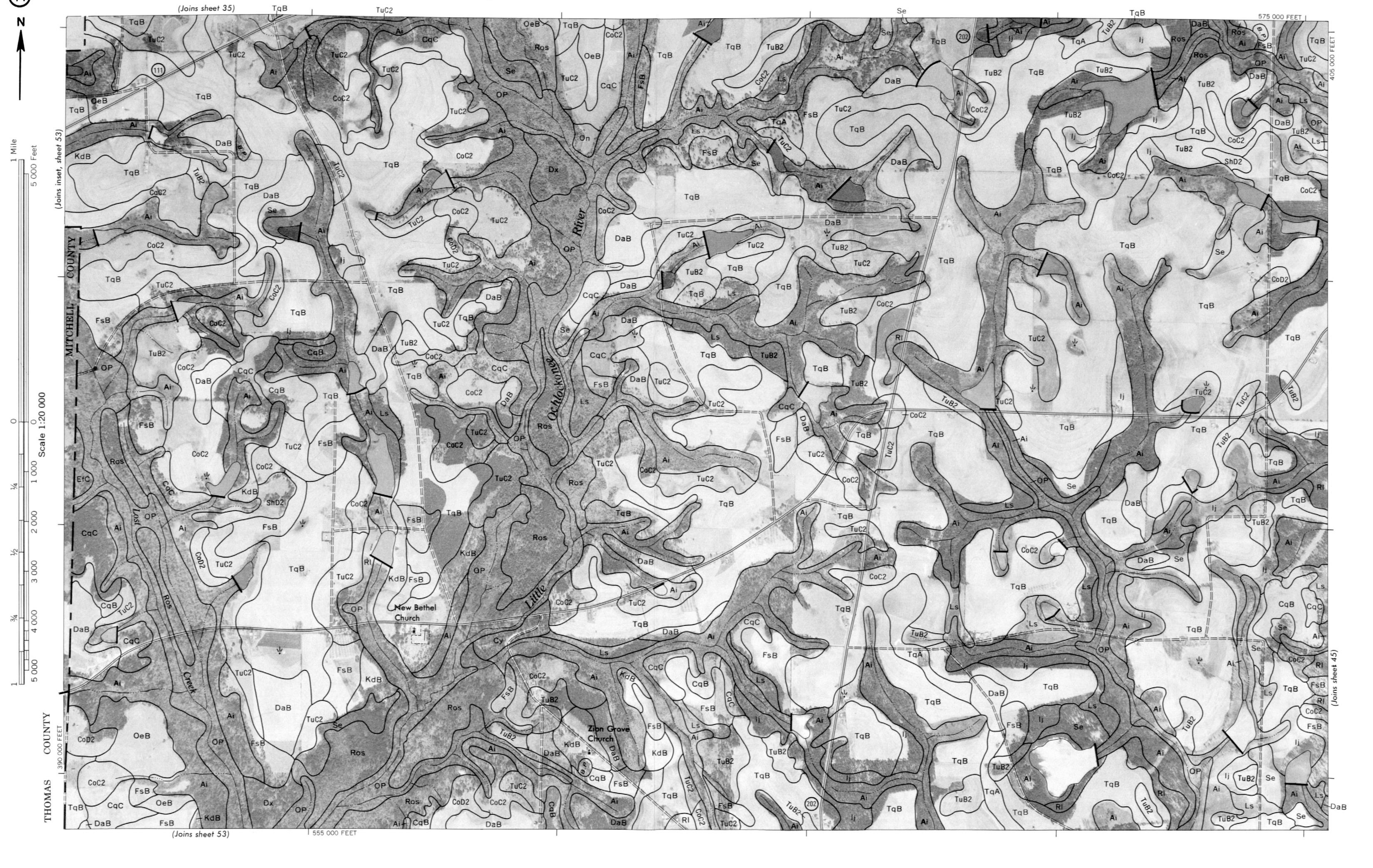

39
N
(Joins sheet 30)
(Joins sheet 38)
(Joins sheet 40)
(Joins sheet 48)
650 000 FEET
420 000 FEET
410 000 FEET
670 000 FEET
Bear Creek
Indian Creek
Bull Creek
Indian Creek Church
1 Mile
3/4
1/2
1/4
0
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
Scale 1:20 000

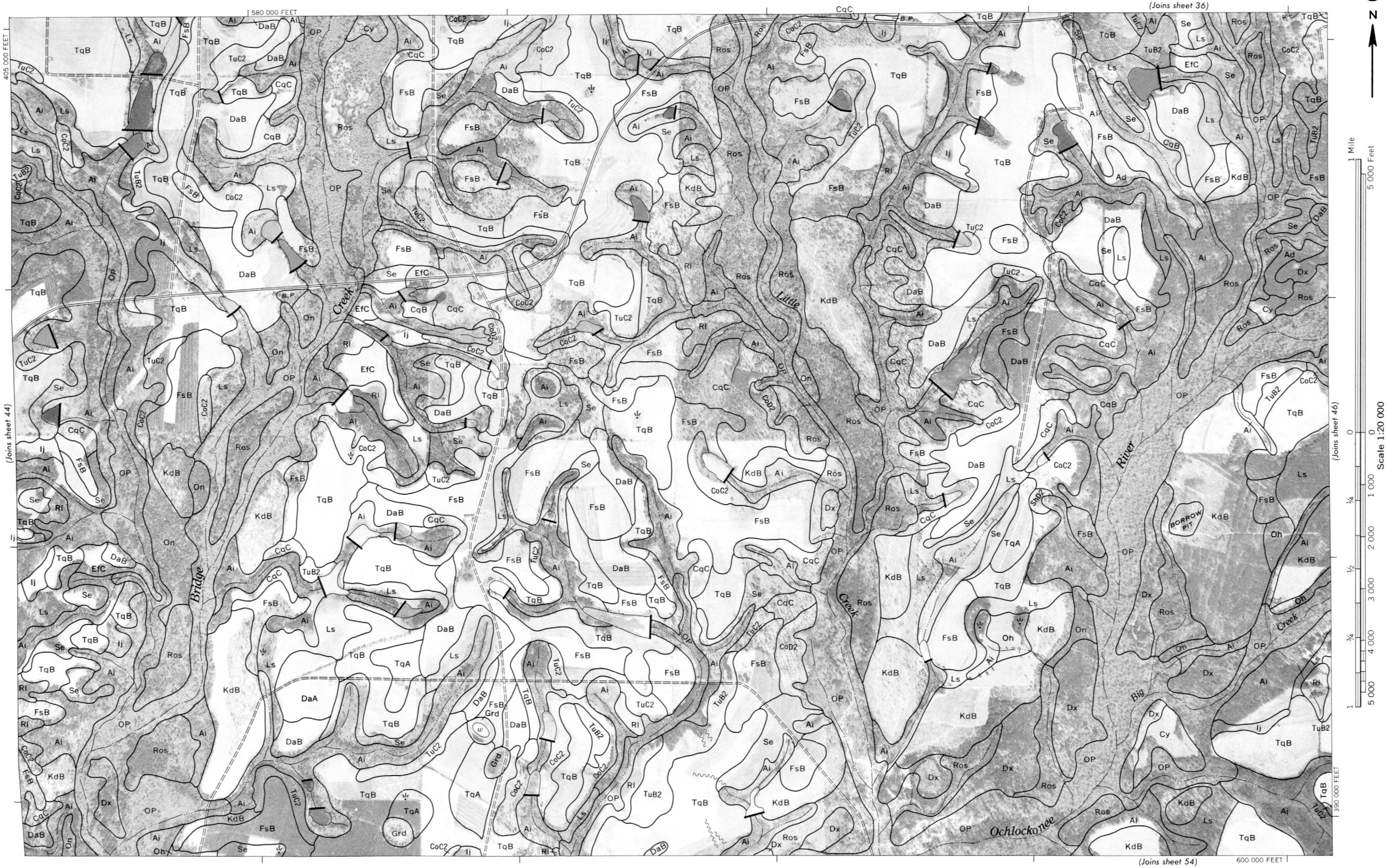

N
(Joins sheet 31)
(Joins sheet 39)
(Joins sheet 41)
(Joins sheet 49)
695 000 FEET
675 000 FEET
420 000 FEET
410 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
GEORGIA NORTHERN
COLQUITT COUNTY
COOK COUNTY
SAND PIT
water
LITTLE RIVER
Bull Creek
Bear Creek
Pikes Creek
China Grove Church

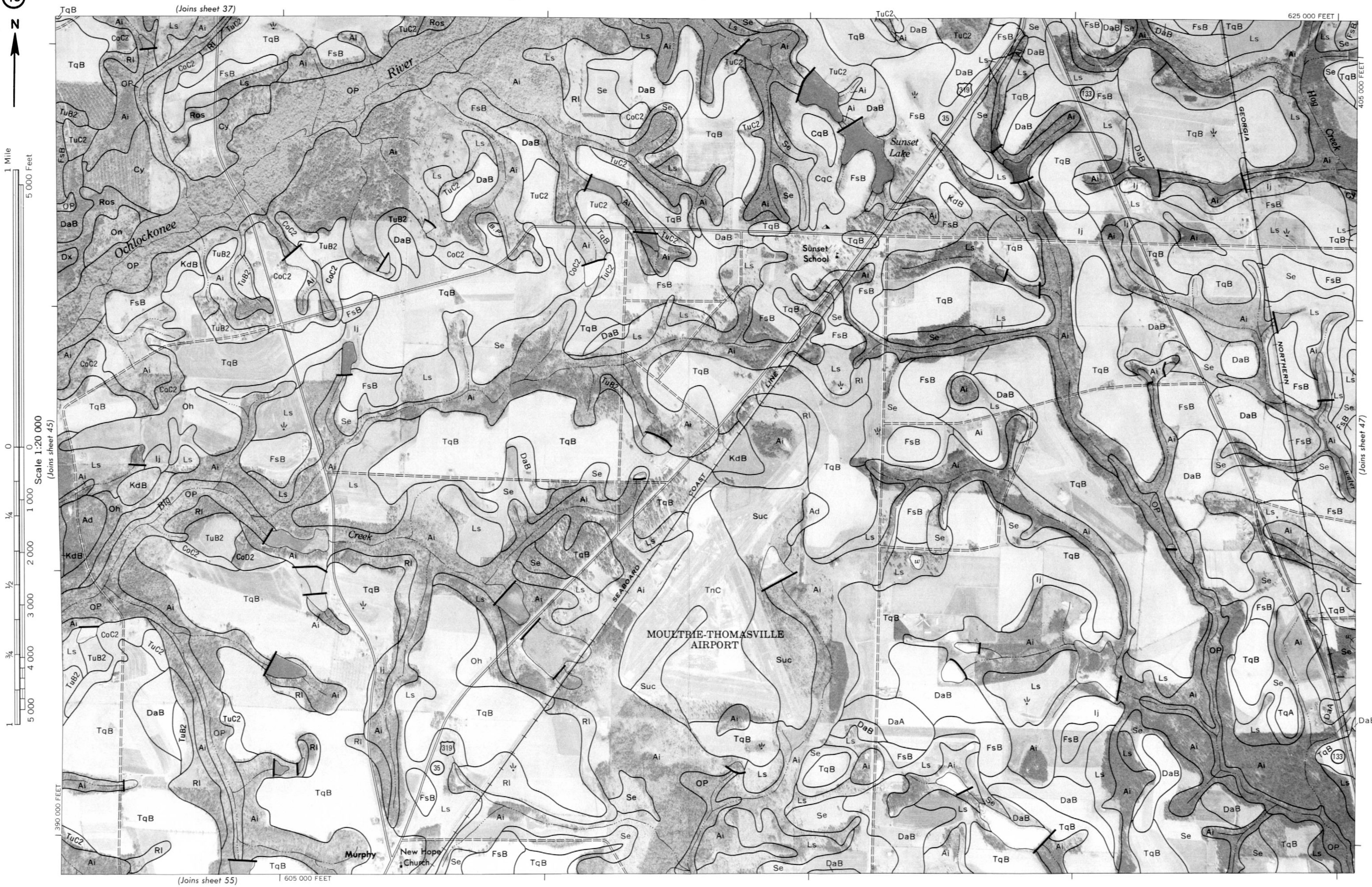

700 000 FEET
(Joins sheet 32)
N
Giddens Pond
Giddens Mill Creek
CITY LAND FILL
BORROW PIT
420 000 FEET
(Joins sheet 40)
(Joins sheet 42)
COOK COUNTY AIRPORT
No Mans Friend Pond
Sylvester Church
Pikes Creek
Morrison Creek
410 000 FEET
720 000 FEET
(Joins sheet 50)
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000


(Joins sheet 33)
(Joins sheet 41)
(Joins sheet 43)
(Joins sheet 51)
745 000 FEET
420 000 FEET
410 000 FEET
725 000 FEET
N
Scale 1:20 000
1 Mile
5 000 Feet
Sparks
SPARKS CEMETERY
Giddens
Mill
Creek
Bear
Cook County School
Branch
SOUTHERN
COOK COUNTY AIRPORT
ADEL
(county seat)
Adel School
BORROW PIT
water
Radio Tower
Morrison
Creek
Bear
Branch
Creek
Duss

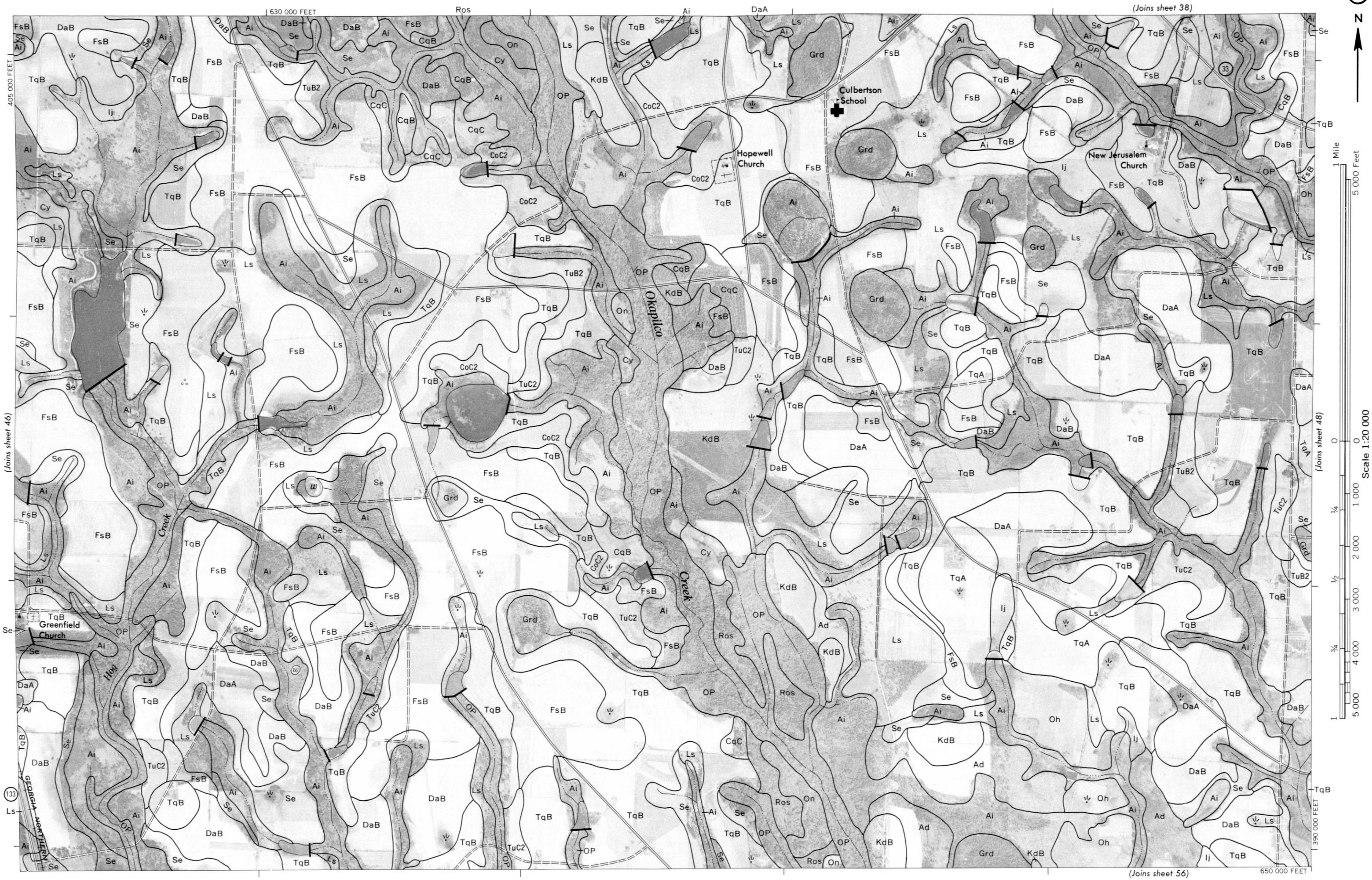
750 000 FEET
(Joins sheet 34)
N
(Joins sheet 42)
(Joins sheet 52)
770 000 FEET
420 000 FEET
410 000 FEET
Parrish Pond
Goose Pond
water
Youngs
Mill
Creek
New
River
River
BERRIEN
COUNTY
Withlacoochee
Forest Hill Church
Community Church
Bear
Branch
Daus
Creek
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000
Scale 1:20 000


N
(Joins sheet 35)
(Joins inset, sheet 53)
(Joins sheet 45)
(Joins sheet 53)
575 000 FEET
405 000 FEET
555 000 FEET
390 000 FEET
MITCHELL COUNTY
THOMAS COUNTY
Little Ochlockonee River
Lost Creek
New Bethel Church
Zion Grove Church
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

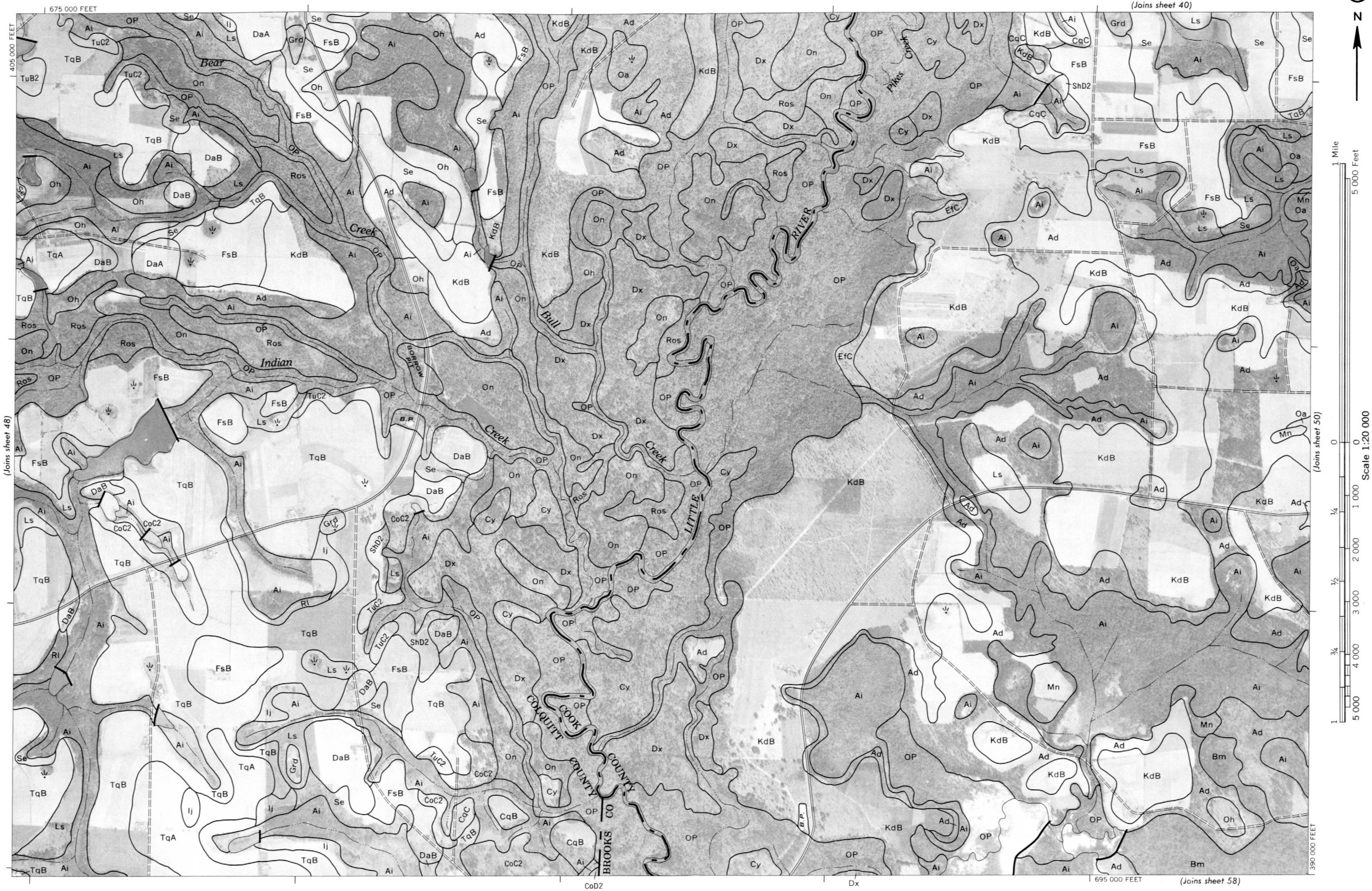

(Joins sheet 36)
(Joins sheet 44)
(Joins sheet 46)
(Joins sheet 54)
580 000 FEET
600 000 FEET
405 000 FEET
390 000 FEET
N
Scale 1:20 000
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
Bridge
Creek
Little
Creek
Big
River
Ochlockonee
Creek
BORROW PIT
B.P.


N
(Joins sheet 37)
(Joins sheet 45)
(Joins sheet 47)
(Joins sheet 55)
625 000 FEET
405 000 FEET
390 000 FEET
605 000 FEET
Scale 1:20 000
1 Mile
5 000 Feet
Ochlockonee
River
Big
Creek
Hog
Creek
Sunset
Lake
Sunset
School
MOULTRIE-THOMASVILLE
AIRPORT
SEABOARD
COAST
LINE
GEORGIA
NORTHERN
Murphy
New Hope
Church
319
35
133

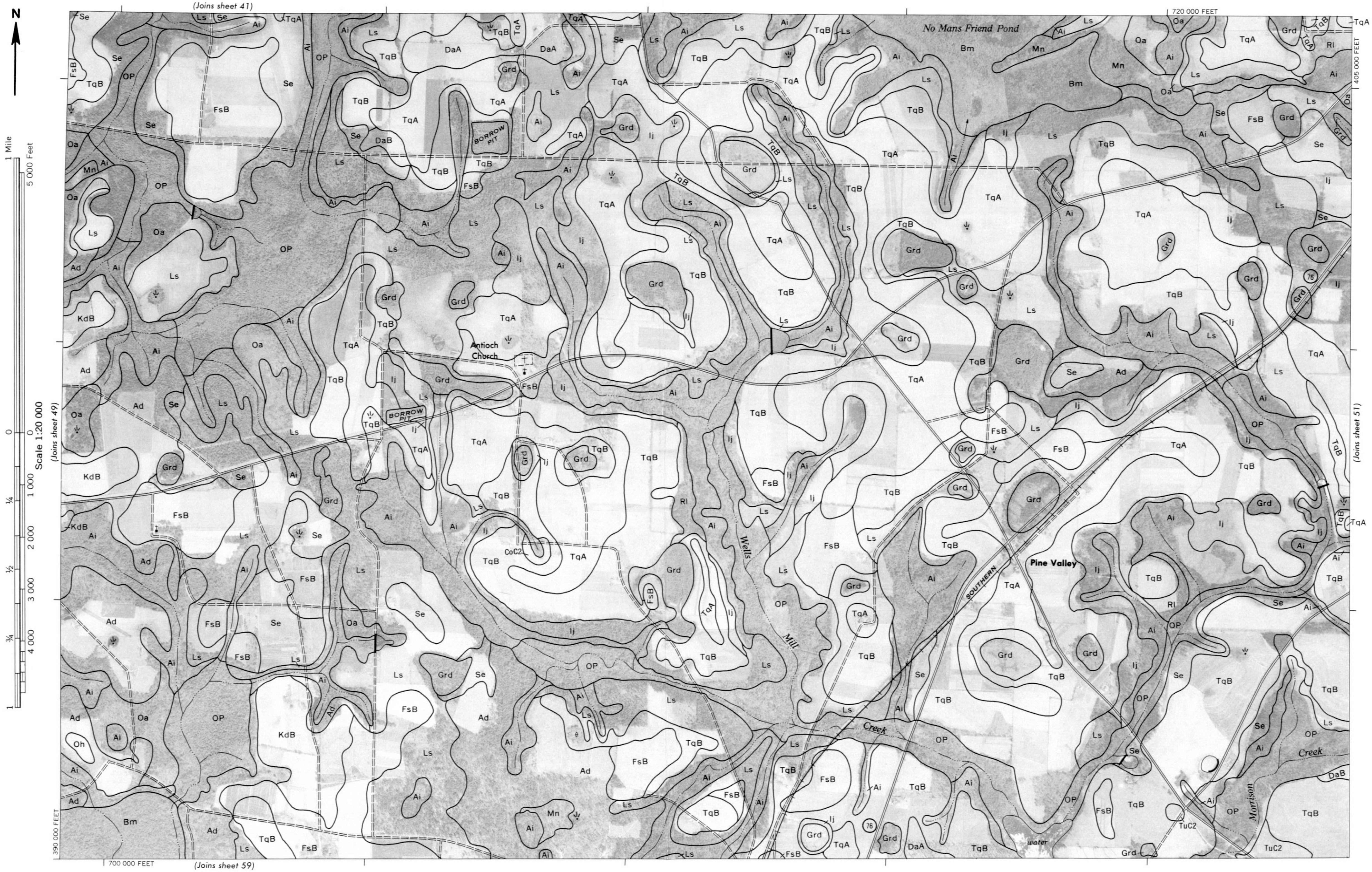
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 47



COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 48

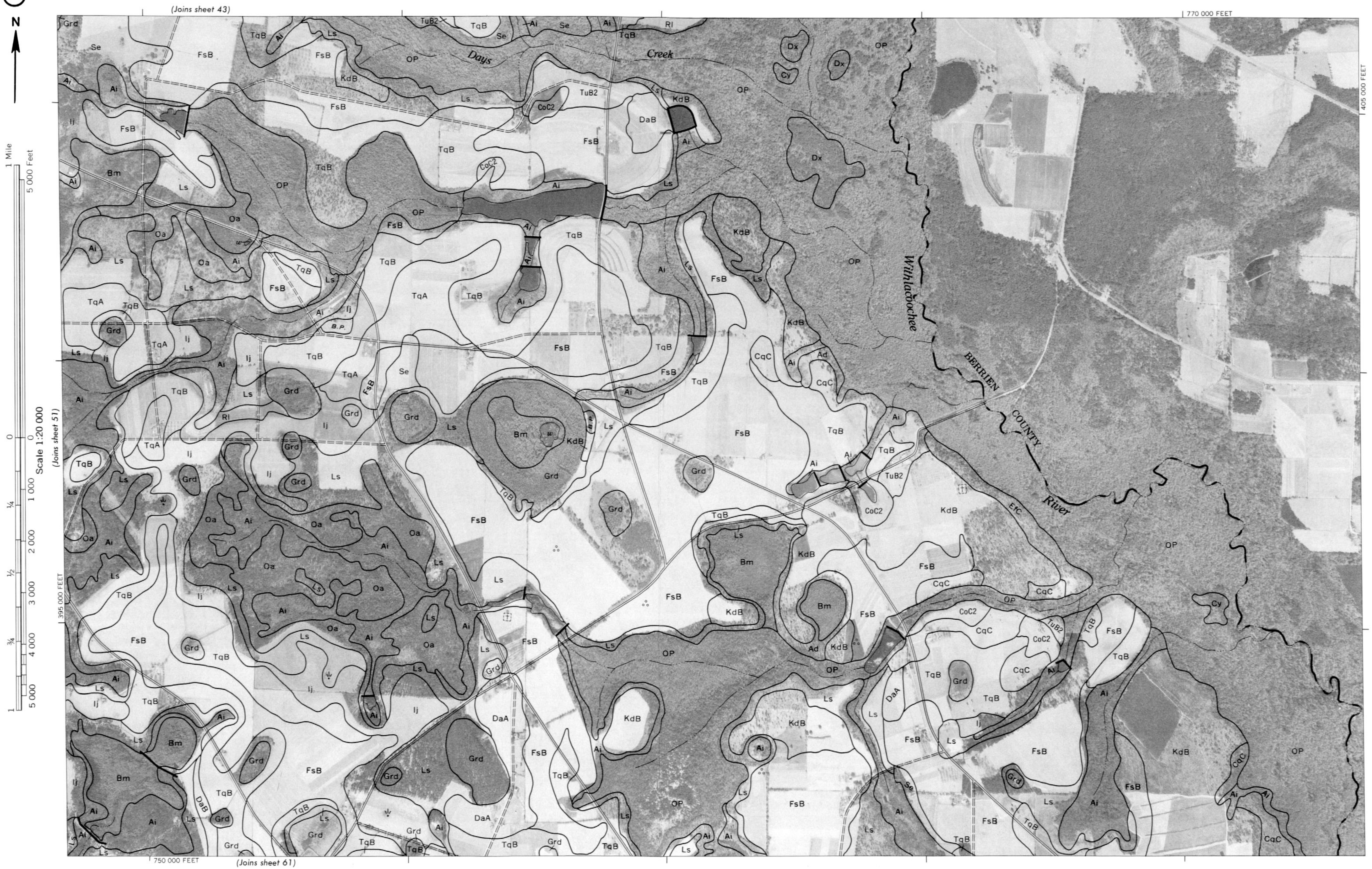


675 000 FEET
405 000 FEET
(Joins sheet 40)
(Joins sheet 48)
(Joins sheet 50)
(Joins sheet 58)
695 000 FEET
390 000 FEET
N
Bear Creek
Indian Creek
Bull Creek
Pikes Creek
LITTLE RIVER
BORROW PIT
B.P.
COLQUITT COUNTY
COOK COUNTY
BROOKS CO
CoD2
Dx
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000

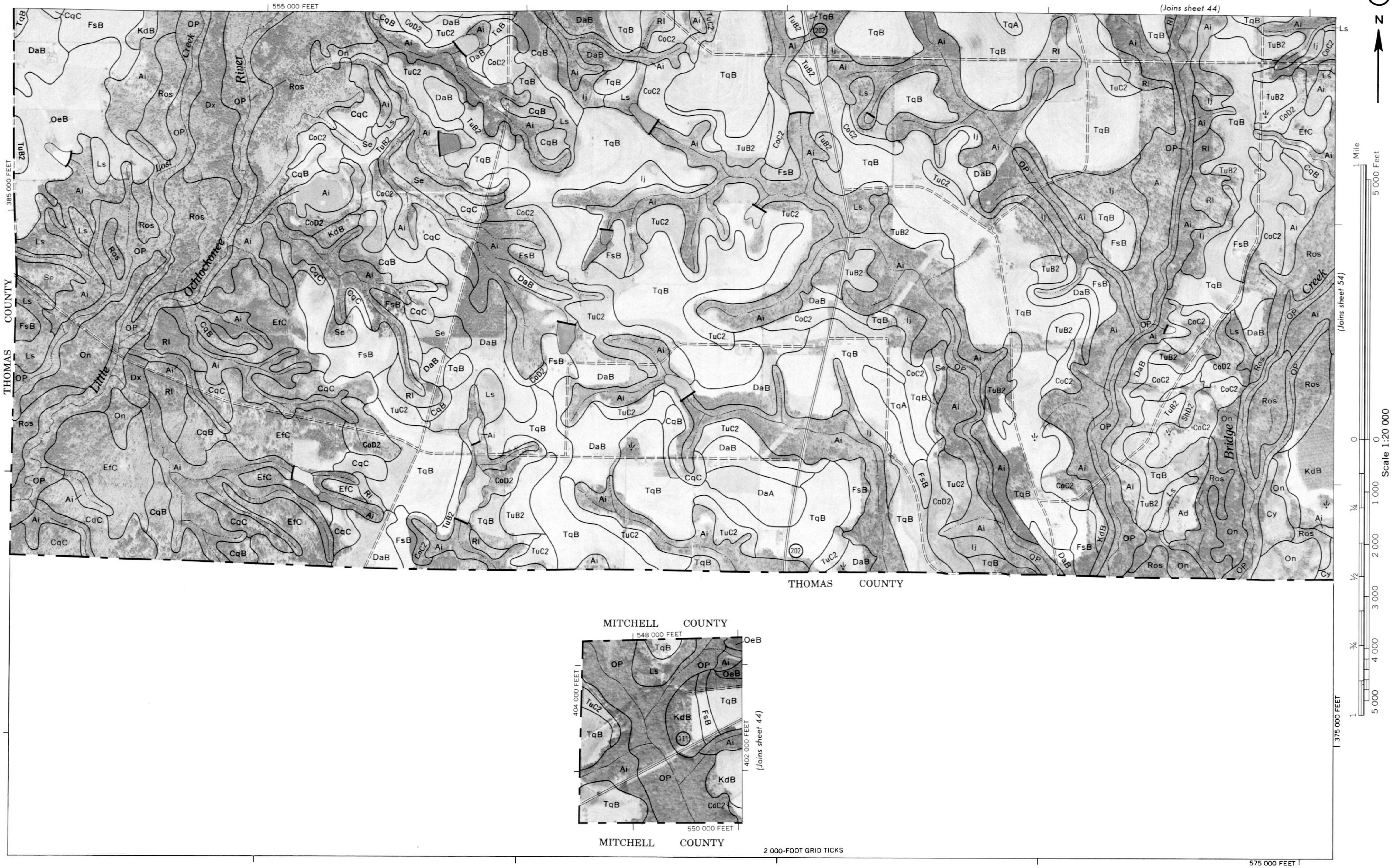

N
1 Mile
5 000 Feet
Scale 1:20 000
(Joins sheet 41)
(Joins sheet 49)
(Joins sheet 51)
(Joins sheet 59)
720 000 FEET
405 000 FEET
700 000 FEET
390 000 FEET
No Mans Friend Pond
Antioch Church
BORROW PIT
Pine Valley
SOUTHERN
Wells
Mill
Creek
Morrison
Creek
water


51
N
725 000 FEET
405 000 FEET
(Joins sheet 42)
(Joins sheet 50)
(Joins sheet 52)
(Joins sheet 60)
745 000 FEET
395 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
Heart Pine Pond
Morrison Creek
Hutchinson Mill Creek
BORROW PIT
SOUTHERN
water
B.P.
41
7
75
401
76

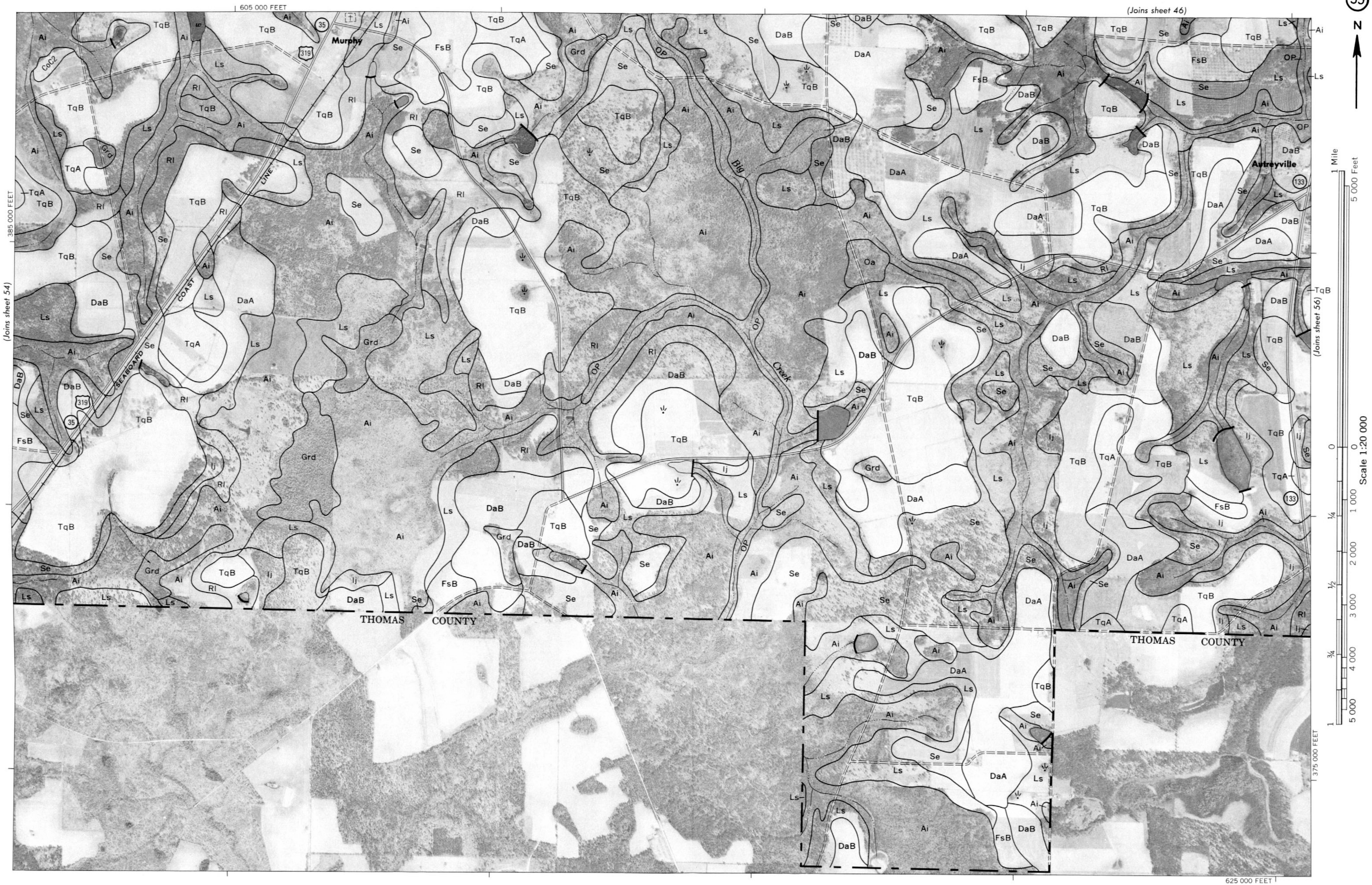
COLQUITT AND COOK COUNTIES, GEORGIA — SHEET NUMBER 52

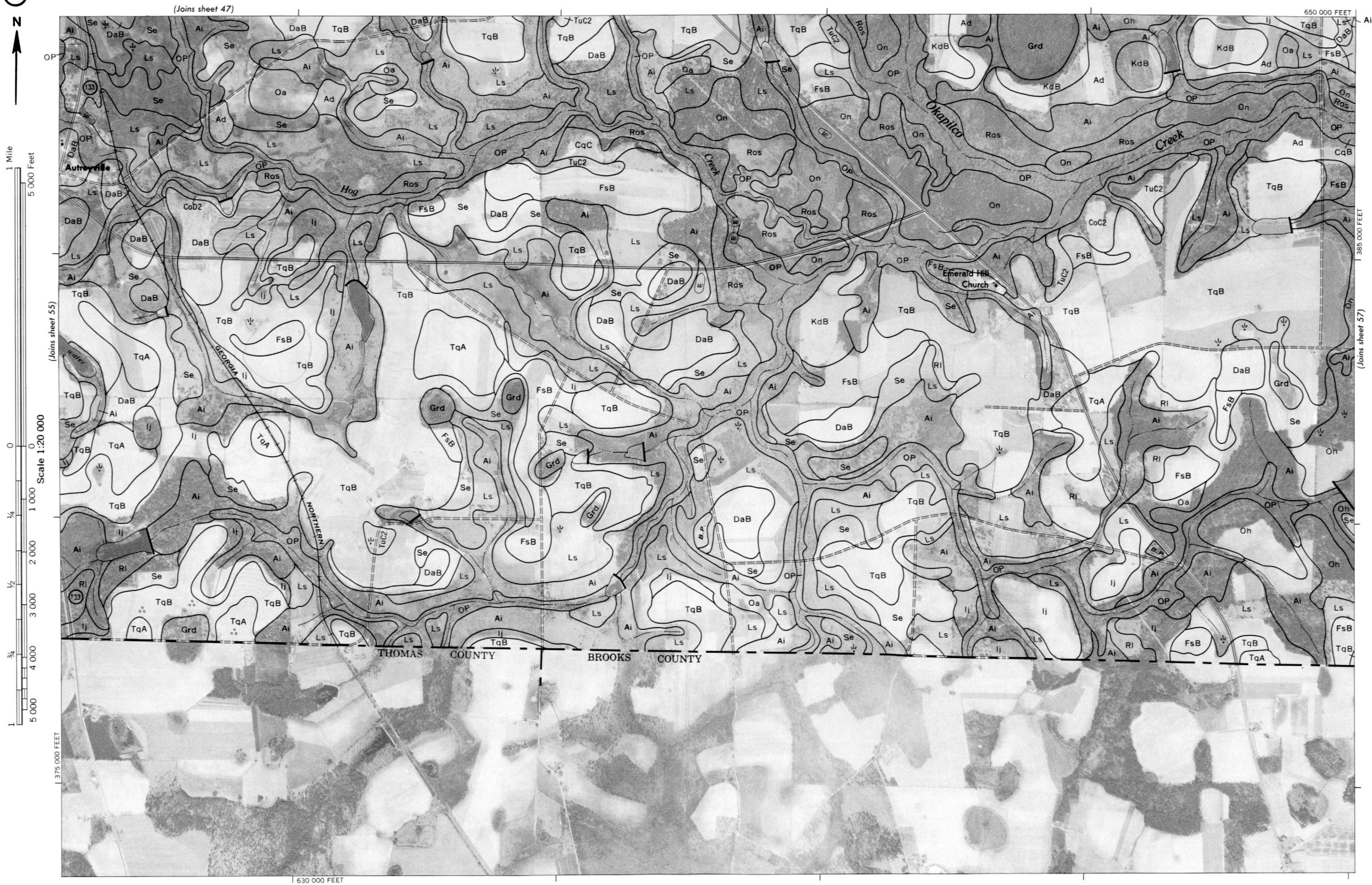


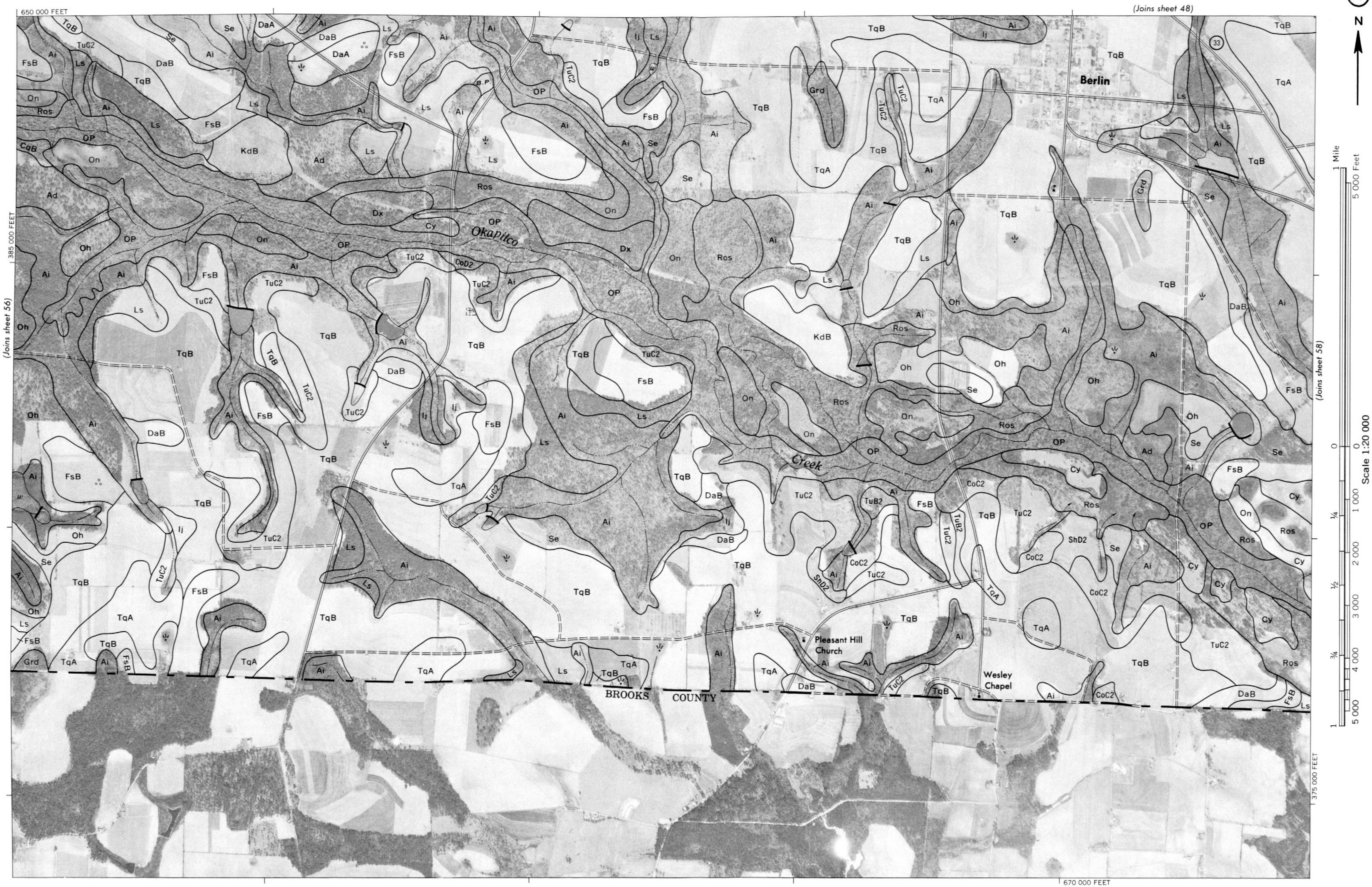
53


555 000 FEET
(Joins sheet 44)
(Joins sheet 54)
N
THOMAS COUNTY
THOMAS COUNTY
Little Ochlockonee River
Lost Creek
Bridge Creek
385 000 FEET
MITCHELL COUNTY
MITCHELL COUNTY
548 000 FEET
550 000 FEET
404 000 FEET
402 000 FEET
(Joins sheet 44)
2 000-FOOT GRID TICKS
575 000 FEET
375 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000


N
(Joins sheet 45)
600 000 FEET
(Joins sheet 53)
(Joins sheet 55)
385 000 FEET
375 000 FEET
580 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Bridge
Creek
Ochlockonee
River
THOMAS COUNTY
B.P.
319
35

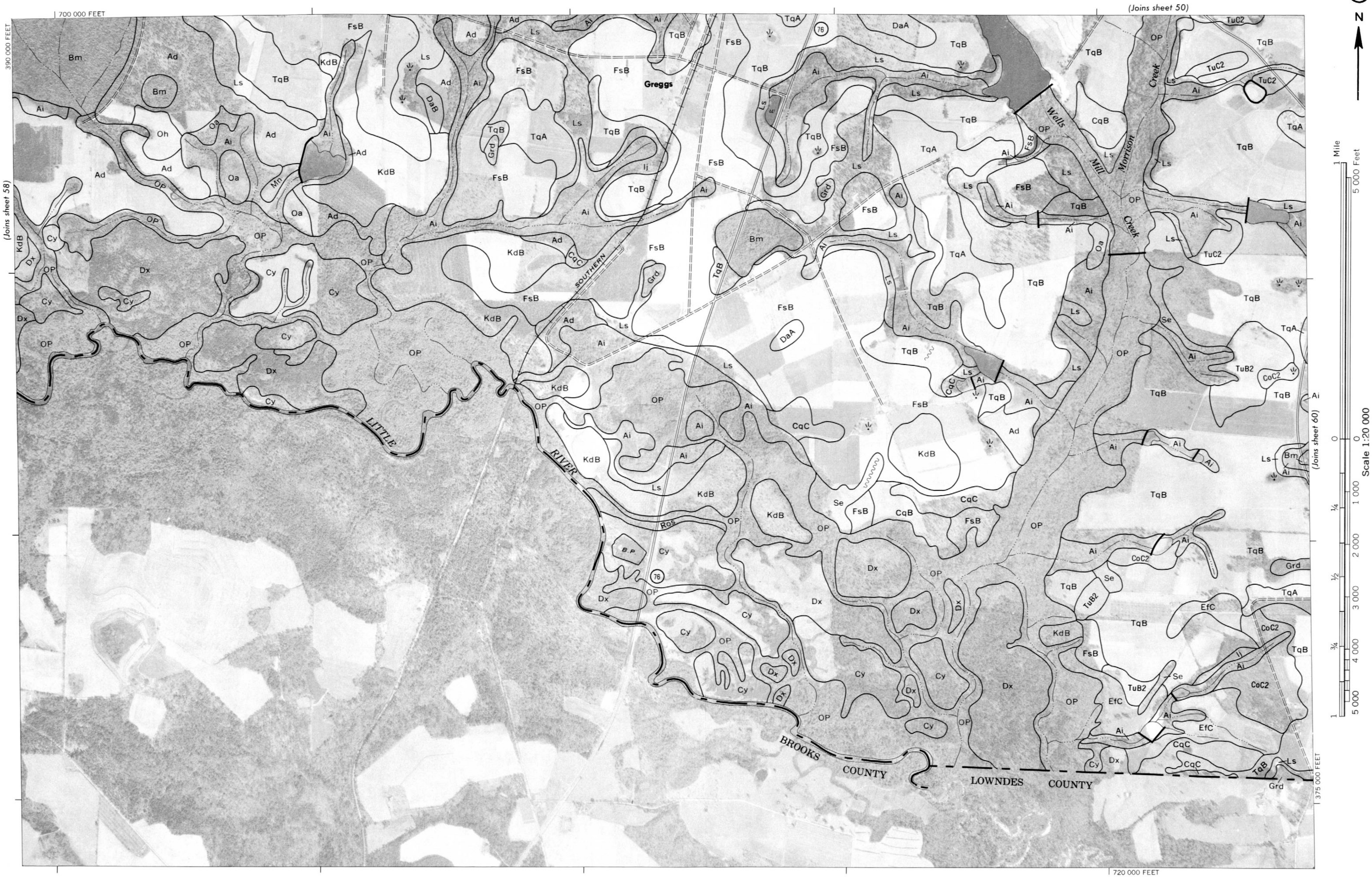

605 000 FEET
(Joins sheet 46)
(Joins sheet 54)
(Joins sheet 56)
385 000 FEET
375 000 FEET
625 000 FEET
Murphy
Autreyville
SEABOARD
COAST
LINE
Big
Creek
THOMAS
COUNTY
THOMAS
COUNTY
N
1 Mile
5 000 Feet
Scale 1:20 000

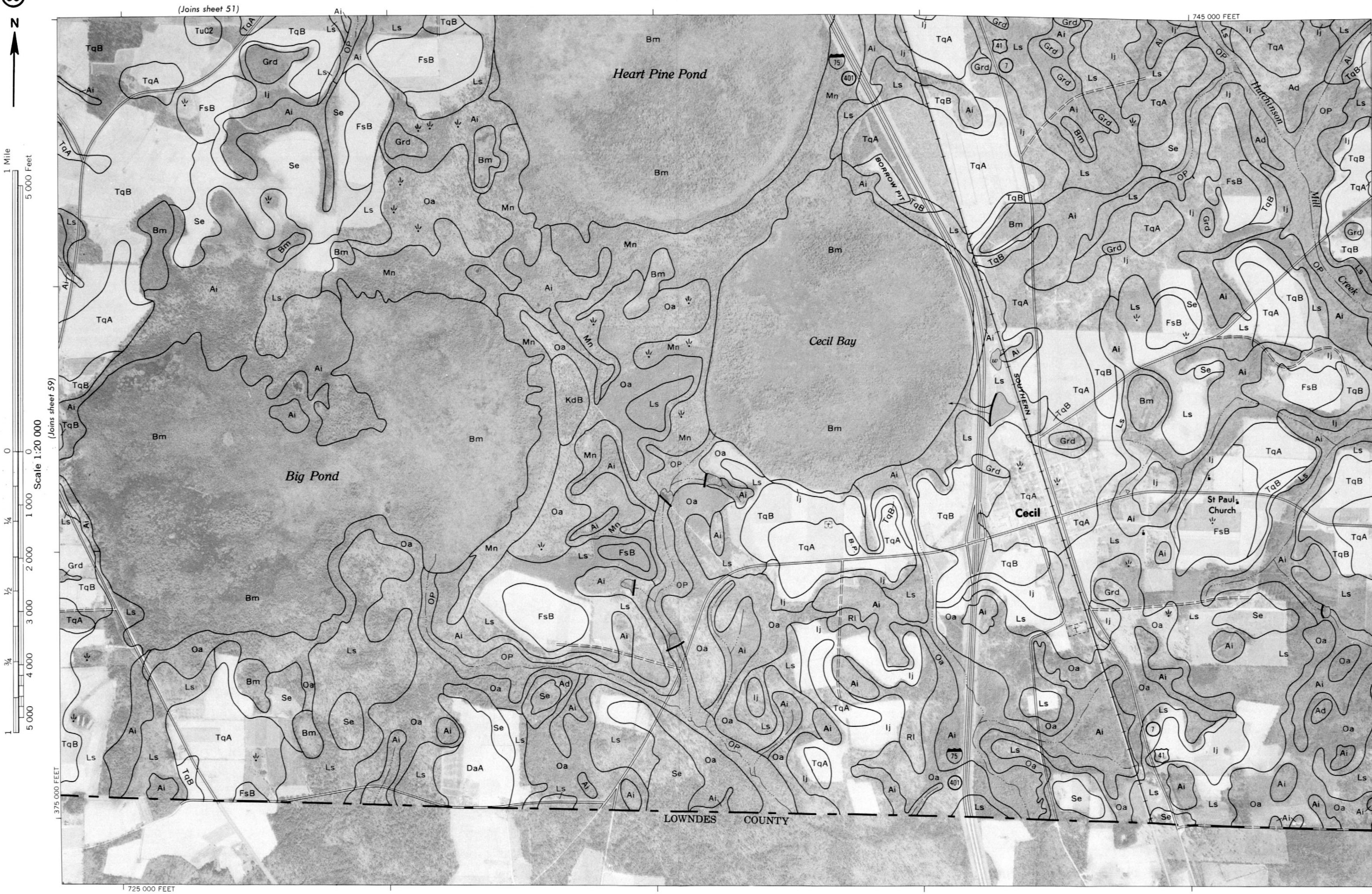

N
(Joins sheet 47)
(Joins sheet 55)
(Joins sheet 57)
650 000 FEET
385 000 FEET
375 000 FEET
630 000 FEET
Autreyville
Hog
Creek
Okapilco
Creek
Emerald Hill
Church
GEORGIA
NORTHERN
THOMAS
COUNTY
BROOKS
COUNTY
water
B.P.
133
1 Mile
5 000 Feet
Scale 1:20 000
0
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1

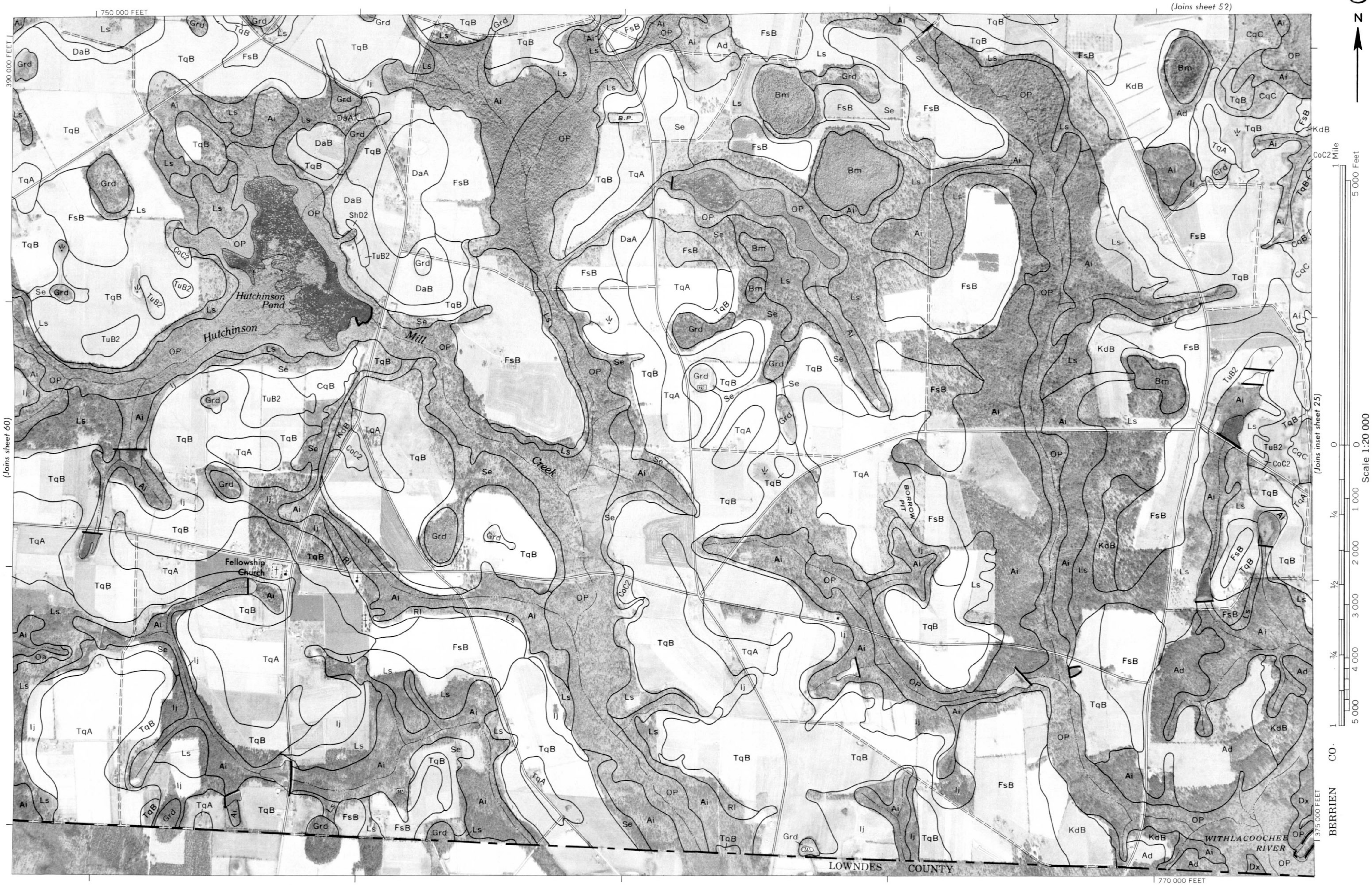


650 000 FEET
(Joins sheet 48)
(Joins sheet 56)
(Joins sheet 58)
385 000 FEET
375 000 FEET
670 000 FEET
N
Berlin
33
Okapilco
Creek
Pleasant Hill Church
Wesley Chapel
BROOKS COUNTY
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


(Joins sheet 49)
(Joins sheet 57)
(Joins sheet 59)
N
1 Mile
5 000 Feet
Scale 1:20 000
695 000 FEET
390 000 FEET
375 000 FEET
675 000 FEET
LITTLE RIVER
COOK COUNTY
BROOKS COUNTY
COLQUITT COUNTY
BROOKS COUNTY
Hempstead Church
Okapilco Creek
33


N
(Joins sheet 50)
(Joins sheet 58)
(Joins sheet 60)
700 000 FEET
720 000 FEET
390 000 FEET
375 000 FEET
Greggs
SOUTHERN
LITTLE RIVER
Wells Mill Creek
Morrison Creek
76
BROOKS COUNTY
LOWNDES COUNTY
Scale 1:20 000
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


N
(Joins sheet 51)
(Joins sheet 59)
(Joins sheet 61)
Scale 1:20 000
1 Mile
5 000 Feet
745 000 FEET
390 000 FEET
375 000 FEET
725 000 FEET
Heart Pine Pond
Cecil Bay
Big Pond
Cecil
St Paul Church
Hutchinson
Mill
Creek
BORROW PIT
SOUTHERN
LOWNDES COUNTY


750 000 FEET
390 000 FEET
(Joins sheet 52)
(Joins sheet 60)
(Joins inset sheet 25)
Hutchinson Pond
Hutchinson Mill Creek
Fellowship Church
B.P.
BORROW PIT
WITHLACOOCHEE RIVER
LOWNDES COUNTY
BERRIEN CO.
375 000 FEET
770 000 FEET
N
1 Mile
5 000 Feet
Scale 1:20 000